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THE ARCHAEOLOGY OF CHINCHA FISHERMEN: SPECIALIZATION AND STATUS IN INKA PERU

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PREFACE

The intent of this monograph is twofold. First, it is a site report for the Late Horizon (Inka, ca. A.D. 1480–1532) fishing site called Lo Demás, located on the north side of the Chincha valley on the south-central coast of Peru. Second, it is an exploration of late pre-Hispanic economic organization on the Peruvian coast, using ethnohistoric data to generate hypotheses and testing these hypotheses through archaeological excavation and analysis. Given these foci, the monograph is necessarily written for an audience of specialists in Andean studies. However, the results touch on areas of potentially wider interest, such as the recognition of specialization and status differences in the archaeological record, the interplay between ethnohistoric and archaeological data, the analysis of organic remains, etc. Therefore, I have attempted to make this study accessible to non-Andeanists, principally by defining terms used by specialists in the region. Spanish and Quechua terms are italicized, and definitions appear in parentheses or notes following the first use of each term. The glossary at the end of the monograph provides expanded definitions for these terms, for some place and proper names, and for other specialized terms in English.

All translations from Spanish to English are my own. The original Spanish texts for citations from colonial documents are provided in the notes. In the text, citations from colonial documents follow the usual convention of listing the year of the edition used in parentheses, the year of original publication or writing in brackets, the page number(s) for the edition used, and the chapter or other internal divisions of the original for cross-correlating with other editions.

Occasionally, tables or figures from other publications are cited. To avoid confusion with references to tables and figures in this monograph, I use the following convention: tables or figures which are listed *within* the same parentheses as a citation to another publication refer to that publication; tables or figures from this study are cited separately (with or without parentheses).

This monograph is a revised version of my doctoral dissertation (Sandweiss, 1989). Most of the original tables and illustrations are reproduced here; those which are omitted are referenced to the dissertation. Several of the tables have been modified to accommodate more recent data; such changes are noted in the text or notes.

I have benefitted from the assistance of many individuals and institutions (*see* Acknowledgments). However, all omissions, and errors of fact and interpretation are mine alone.

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ABSTRACT

At the time of the European invasion, the Chincha valley, Peru, was the seat of an important coastal polity under Inka dominion. The ethnohistoric record shows a prosperous kingdom with a far-flung trading network and a large, local population rigidly divided into occupationally specialized communities. Among the specialists were fishermen who, according to one document, lived in their own settlement and did nothing but fish, drink, and dance.

A section of the late pre-Hispanic Chincha fishing settlement described by the document was discovered and excavated during archaeological field work (1983–1984) designed to evaluate the ethnohistoric record for Chincha and assess the role of fishermen in late pre-Hispanic coastal economies. This monograph details work at this Late Horizon site, called "Lo Demás," and contrasts the archaeological data with the incomplete documentary record. Only common fishermen were rigidly specialized, and even they had to carry out the daily chores of domestic life in addition to fishing. In contrast, the lords of the fishermen controlled a variety of craft specialists as well as fishermen. Status differences in architecture and subsistence as well as other activities were well marked in the archaeological record. These findings corroborate more extensive ethnohistoric data from north coastal Peru, indicating an interregional dimension to late pre-Hispanic coastal economies.

In the documents concerning Chincha, the information on specialization refers specifically to the period of Inka domination of the coast, and not to pre-Inka conditions. Similarly, the excavations at "Lo Demás" provide evidence only for the Inka period economy; the absence of a pre-Inka component at the site is an important indicator of significant reorganization of the local Chincha economy by the Inka. However, a comparison of the Chincha data with north coast archaeological research shows that the principles of economic organization determined for the Chincha fishermen also were broadly characteristic of the pre-Inka, Late Intermediate Period Chimú kingdom. This, in turn, indicates that the Inka modified but did not originate the kind of economic organization that the ethnohistoric record describes for the Peruvian coast during the Late Horizon.

CHAPTER 1

INTRODUCTION

The ethnohistoric record for the Andes provides valuable insights into the economic, political, and social structures of the region's late pre-Hispanic inhabitants. Unfortunately, this record is neither complete nor infallible. The native informants and their European observers are long dead, and we cannot know what biases motivated them. However, the archaeological investigation of these peoples' material remains can, at the least, confirm or deny many specific aspects of the ethnohistoric record. At best, archaeology can provide a "contrasting portrayal of the past" (Charleton, 1981:155) leading to new insight into the Andean world on the eve of the European invasion in A.D. 1532.

This study concerns the economic organization of Chincha, an important coastal polity under Inka dominion at the time of the Spanish Conquest. The few ethnohistoric documents available for Chincha show a prosperous coastal kingdom with a far-flung trading network and a large, local population rigidly divided into occupationally specialized communities. Among the specialists, the primary document speaks most clearly and at greatest length about the fishermen, said to number 10,000 tribute-payers, or about a third of the total population. These fishermen lived apart in their own settlement and—when not fishing—enjoyed the finer aspects of pre-Columbian life, "drinking and dancing and so on" (Rostworowski, 1970:171).

This picture is an appealing one, but the archaeological record suggests that it is not the whole truth. Excavations in part of the Chincha fishing settlement indicate that only the common fishermen were rigidly specialized; even they had to carry out the daily chores of domestic life (an area not covered by the written record) in addition to fishing. In contrast, the lords of the fishermen controlled the production of a variety of crafts as well as of fish; this aspect of pre-Hispanic coastal organization is seen in the ethnohistoric record for the Peruvian north coast, but the ethnohistory for Chincha itself does not hint at such complexity. Although the document for Chincha mentions the existence of lords, it remained for the archaeology to show their different status in terms of architecture, subsistence, and organization of production.

The archaeology also shows that the section of the fishing settlement studied dates to the Late Horizon, or period of Inka domination of the Andes. The Inka originated in Cuzco, in the southern highlands of Peru; in the mid-1400s, they began a wave of conquest that rapidly spread their control for thousands of kilometers along the Andean mountain chain and adjacent territories. Chincha was incorporated into the Inka Empire around A.D. 1476 (Menzel and Rowe, 1966:67), probably by treaty rather than military defeat. Although previous studies have suggested that the Inka left the economic structure of Chincha largely intact (e.g., Rostworowski, 1970), this investigation suggests that the organization of Chincha *did* change significantly under Inka rule.

Objectives and Organization

The major objectives of this study are listed below in order of increasing generality. The first objective (necessary to the evaluation of the others) is the archaeological identification of the Late Horizon Chincha fishing settlement described by the documents. A portion of this settlement was found, named "Lo Demás," and partially excavated. The second objective is the delineation of the lifeways of the site's inhabitants, including subsistence, production, and exchange. Third is the evaluation of the archaeological data in terms of the document-derived models of economic organization. The final objective is a comparison with data on earlier coastal economies to determine the degree to which the ethnohistoric record reflects pre-Inka conditions and the degree to which it shows transformations wrought under Inka rule.

These objectives are intimately related to the ethnohistoric record for Chincha and for the late pre-Hispanic coast in general, but at the higher levels of generality, they transcend a mere confirmation or denial of statements made in specific documents. Rather, I hope to contribute to an integrated understanding of pre-Hispanic Andean coastal organization through a careful combination of archaeology and ethnohistory.

This study has three major sections: introductory and background material (Chapters 1–4), archaeological data from Lo Demás, the Chincha fishing settlement (Chapters 5–10), and summary and conclusions (Chapters 11–12).

CHAPTER 2

THE ECONOMIC ORGANIZATION OF CHINCHA: ETHNOHISTORIC DATA

This chapter discusses the ethnohistory of Chincha, located on the southcentral coast of Peru, and contrasts it with the documentary data for the Peruvian north coast.

The Ethnohistory of Chincha

Sources

Rostworowski (1970) provides the most complete review of the available documentary data on late pre-Hispanic Chincha (*see also* Menzel and Rowe, 1966). The valley and the polity it contained are often mentioned by the early chroniclers, but it is Cieza, in his *Crónica del Perú* (1984 [1550]) and *Señorío de los Incas* (1985 [1553]), who provides the most detailed information.

In addition to Cieza, the other primary sources of published information on late pre-Hispanic Chincha are two related documents concerned mainly with the nature of Inka governance and tributation: "Relaçión y declaraçión del modo que este valle de Chincha y sus comarcanos se governavan antes que oviese yngas y después q[ue] los vuo hasta q[ue] los cristianos entraron en esta tierra,"[1] by Castro and Ortega Morejón (Crespo, 1975), henceforth referred to as the "Relación"; and "Aviso de el modo que havía en el govierno de los indios en tiempo del inga y como se repartían las tierras y tributos"[2] (Rostworowski, 1970), henceforth referred to as the "Aviso." The "Relación" was written in 1558; although the "Aviso" has no date, Rostworowski (1970:140) uses internal evidence to place it between 1570 and 1575. Following Lohmann (1966) and Wedin (1966), Rostworowski (1970:138–140) argues that the similarities between the "Relación" of Castro and Ortega Morejón and the anonymous "Aviso" (as well as two other documents which do not directly concern Chincha) were based on as-yet undiscovered writings of Fray Domingo de Santo Tomás, a Dominican friar who founded the first monastery in Chincha (ca. 1542) as well as a monastery in the Chicama valley on the north coast of Peru. Rostworowski (1970:139–140) suggests that Cieza also drew on Santo Tomás for some of his information about Chincha. The differences between the documents indicate that "each author added his own information" (Rostworowski, 1970:140).

Several issues of interpretation concerning the "Relación" and the "Aviso" are directly involved in understanding late pre-Hispanic Chincha. First, which information refers to Chincha, and which refers to other valleys or to the Inka empire as a whole? Second, how much of the information concerning Chincha reflects conditions that originated under Inka rule and how much reflects the survival of local customs and traditions? The documents provide some internal clues to answer these questions, but a combination of ethnohistory and archaeology provides a fuller understanding of pre-Inka and Inka Chincha because of the greater time depth and material basis of the archaeological data.

Third, to what degree do the documents reflect conditions brought about by the Spanish conquest, considering that they were written 26 and 38 to 43 years after that event? The stated intent of both the "Relación" and the "Aviso" is to describe pre-Hispanic conditions; the full titles of both documents make this clear. The authors of the "Aviso" and the "Relación" do refer to postconquest conditions, but they do so quite explicitly, in order to make contrasts with the pre-Hispanic situation.[3] Furthermore, if Rostworowski (1970:138–140) is right (as seems likely) that both documents drew on information provided by Santo Tomás, then both are based on observations made within ten years of the conquest. Finally, Hernándo de Santillán (the author of one of the other documents which Lohmann [1966], Wedin [1966], and Rostworowski [1970] found to be derived in part from a common source) makes the following statement concerning the method of gathering information

> "The relation of these [facts] can only be given because they have been taken from old Indians by persons who know their language"[4] (Santillán, 1968 [1563–1564]:103).

A more likely problem than whether or not the documents *refer* to pre-Hispanic conditions is the *accuracy* with which they reflect the native Andean world. The information from native informants had to pass through the filter of translation and then be fit into a European conception of the world. Distortion could hardly be avoided. Furthermore, the Andean peoples had no system of writing; history

was kept through oral tradition and with knotted strings called *quipos* or *quipus* (Santillán, 1968 [1563–1564]:103). Nor was the Andean region culturally homogeneous, despite the best efforts of the Inka idealogues (*see,* for instance, Silverblatt, 1988; also Netherly, 1977:292). The author of any document which synthesized conditions in the Andes—such as the "Relación" or the "Aviso"—had to make choices among the competing versions of history and custom. As Santillán (1968 [1563–1564]:103) admits in the preface to his account of the "origin, lineage, policy, and government of the Incas," "they are varied peoples and their accounts [are] in some things different."[5]

Returning to the first question, that of Chincha versus general information in the two documents, Rostworowski's (1970:137) cogent analysis of the "Aviso" is worth quoting at length:

> "To judge by the title, the anonymous author [of the "Aviso"] wished to write about the government and administration during the Inka reign, not in a local manner but rather in a general way. But despite his ambitious purpose, the writer, perhaps without realizing it and from the third paragraph, speaks of Chincha; and when he does so, he leaves the use of the verb in the past tense, and in the present tense says '. . . and now there are no more than 600' (tribute-payers). Then he returns to his impersonal narration dealing with the Inka empire in general, until folio 270 and its verso, when he abandons the monotonous tone to use the present tense and mentions 'the many vacant lands in Chincha.' From that point forward the data are now regional, as much in the information concerning the pre-Hispanic epoch as in that referring to the moment in which he wrote."

In the "Relación" (Crespo, 1975), Castro and Ortega Morejón usually signal the information referring to Chincha with the phrase "in this valley" ("en este valle"). They add an appropriate qualifier if the information applies as well to the neighboring valleys or to the coast as a whole (e.g., "en este valle y en todos estos llanos"). Unqualified statements probably refer to the Inka empire as a whole.

In the discussion of Chincha organization later in this chapter, I follow these guides to distinguishing between Chincha and general information in the "Aviso" and the "Relación." The general information may well apply to Chincha and—given the local source of data for the two documents—much of it probably derived from there. However, congruity cannot be assumed *a priori.*

The documents alone do not resolve the second question, concerning pre-Inka versus Inka traditions in the documents. Although the title of the Castro and Ortega Morejón's "Relación" (Crespo, 1975: 93) speaks of "the way in which this valley of Chincha and its neighbors were governed before there were Incas and after they came," only the first two paragraphs directly discuss pre-Inka conditions (socio-political structure and foreign relations of the south coast valleys). The document then describes the Inka conquest of the south coast, the later history of Inka successions and conquests, and the customs and laws of the Inka. In discussing the inheritance of goods and offices, the "Relación" speaks of pre-Inka and Inka traditions of both coast and highlands, but it is unclear which information (if any) refers to pre-Inka custom (Crespo, 1975:100–101). The "Aviso" attributes essentially the same information to the Inka (Rostworowski, 1970:165). Only in the penultimate paragraph do Castro and Ortega Morejón (Crespo, 1975:103) again mention an explicitly non-Inka custom of the coastal peoples (*yungas*), who they say "did not worship the sun but rather the huacas [shrines or sacred objects]."[6]

The title of the "Aviso" refers solely to Inka times ("el tiempo del inga"). Only one phrase in the document mentions explicitly pre-Inka conditions: in Chincha, "there was a single great lord whom all of the people respected and obeyed, *this was before Thupa 'Inka Yupanki*"[7] (Rostworowski, 1970:170, emphasis added).

Cieza, "the most anthropological of chroniclers" (Murra, 1980:187), differentiates clearly between pre-Inka and Inka conditions. He also warns that

> "As the Inka became [the Chincha's] lords, [the Chincha] took from them many customs, and used their clothing, imitating them in other things that [the Inka] ordered, as the sole lords that they were"[8] (Cieza 1984 [1550]:221, Cap. LXXVIIII).

Menzel and Rowe (1966:68) place the first contact between the Chincha and the Inka in the 1440s, whereas the final annexation of the valley under Thupa Yupanki took place around 1476. Thus, at the time of the Spanish conquest in 1532, Chincha had felt Inka influence for nearly a century, and had been under direct Cuzco control for over 50 years. Murra (1980:162) notes that the Inka rulers rewrote their own history to further the cause of victors in the struggles of succession, while Silverblatt (1988) has shown that the Inka attempted to legitimize their rule by altering the very history of the peoples they conquered. Although the Inka were not fully successful in the Empire at large (many of their subject peoples allied themselves with the Spanish invaders), such attempts at manipulating the past call into question that information in the two documents

which explicitly describes pre-Inka conditions. The statements concerning Chincha during Inka rule are even less reliable as a guide to pre-Inka conditions. This is not to deny that local traditions and biases influenced perceptions of pre-Inka and Inka history and customs in Chineha and elsewhere; variation abounded, but original conditions and events can still be masked. In her analysis of the "Aviso" and elsewhere, Rostworowski (1970:144, 1977 *inter alia*) considers that the economic organization of Chincha as seen in the document reflects a pre-Inka pattern. This may well be true. However, for reasons discussed above, caution must be exercised in making such an assumption from the documentary evidence alone; ultimately, the question must be answered through archaeological research.

Late Pre-Hispanic Chincha

In the following section, I synthesize the information from Cieza, the "Relación," and the "Aviso" concerning late pre-Hispanic Chincha; the reader should bear in mind the caveats discussed in the preceding section. Although in many aspects this synthesis resembles those of Rostworowski (1970), in her commentary on the "Aviso," and Menzel and Rowe (1966), I have compiled the following version by returning to the original sources. Doing so has allowed me to focus more attention on areas of particular interest to this study; furthermore, I do not always agree fully with the earlier interpretations.

According to the "Relación" (Crespo, 1975:93), before the Inka conquest of the south coast, each *ayllu* (social unit) had its lord and its fields; the "Aviso" (Rostworowski, 1970:170) tells us that in Chincha, all were subject to a paramount lord. The coastal peoples worshipped *huacas* instead of the Inka sun god ("Relacion," Crespo, 1975:103). According to Cieza (1984 [1550]:219, Cap. LXXVIIII), the sacred place of Chincha was called "Chincha y Camay" (Chinchaycamac). Presumably, Chinchaycamac was a branch oracle ("son") of the great central coast shrine of Pachacamac; Santillán (1968 [1563–1564]:111) wrote that one of Pachacamac's "sons" was located in Chincha during Inka times (*see* Menzel and Rowe, 1966:68; Patterson, 1985: 164, 167–168; Rostworowski, 1970:142). Menzel and Rowe (1966:68) believe that under the Inka, "Chincha . . . was not only subject to the Inca government but also to the oracle of Pachacamac." Patterson (1985:164) suggests that the Chinchaycamac branch oracle was established by the Pachacamac priests before the Inka conquest of the valley, in part to gain information on Chincha which the priests passed on to their Inka allies/lords. A pre-Inka origin for the *huaca* is consistent with Cieza's (1984 [1550]:220, Cap. LXXVIIII) statement that under the Inka, "the natives of Chincha did not stop worshipping also at their old temple of Chinchaycamac."[9] In any case, the presence of Late Horizon, Pachacamac–Inka and related pottery in Chincha sites (Uhle's sites and Lo Demás) demonstrates some real link between the two areas during the Inka rule of the coast (Menzel, 1966:112–113; Menzel and Rowe, 1966:68–69; Patterson, 1985:167–168).

Castro and Ortega Morejón ("Relación," Crespo, 1975:93) indicate that the south coast valleys lived in a state of constant warfare before the arrival of the Inka; Cieza (1984 [1550]:219, Cap. LXXVIIII) records an origin myth in which the late pre-Hispanic inhabitants of Chincha had conquered and exterminated an earlier race of midgets. The same account states that the Chincha carried out successful raids in the south highlands at the same time as the Inka were founding Cuzco. Accounts of pre-Inka endemic warfare such as those cited for Chincha may well be exaggerated in the chronicles; Inka informants often used this tactic to support the notion of the Inka as the civilizers of the Andes. However, recent archaeological research in different areas of the Andes has found an increased evidence for warfare (principally fortification) in the Late Intermediate Period, immediately preceding Inka conquest (*see* review in Parsons and Hastings, 1988).

According to Cieza (1984 [1550]:219–220, Cap. LXXIIII, 1985 [1553]:172, Cap. LX), the first contact with the Inka was an expedition sent by the Inka ruler Pachakuti Inka Yupanki under the command of Qhapak Yupanki. Dated by Menzel and Rowe (1966:68) to the 1440s, this expedition failed to subjugate Chincha; however, the peaceful incorporation of Chincha into the Inka empire was later carried out under Pachakuti's son Thupa Yupanki (Cieza, 1984 [1550]:220, Cap. LXXVIIII, 1985 [1553]:173, Cap. LX). Menzel and Rowe (1966:68) date this event to around 1476.

Castro and Ortega Morejón's version of the Inka conquest of Chincha ("Relación," Crespo, 1975:93–94; *see also* Rostworowski, 1988*a*:100–103) differs in that Qhapaq Yupanki successfully and peacefully incorporated Chincha and neighboring valleys into the empire; Thupa Yupanki consolidated Inka control of the valleys. As detailed in the "Relación," this process consisted of reordering the political structure into a decimal, Cuzco model with the Inka

now holding the highest position in the hierarchy, imposing the Inka system of justice, and rechanneling tribute (in land, labor, and products) into the Inka state network. Wayna Qhapaq, Thupa Yupanki's son and the next Inka ruler, also imposed new levies in land and labor on his subjects, though the "Relación" does not refer specifically to Chincha at this point.

Cieza (1984 [1550]:220, Cap. LXXVIIII) records that the Inka built "large and sumptuous lodgings for the kings; and many storehouses . . . [and] a temple of the sun" in Chincha.[10] The temple was staffed with priests and virgins, and an Inka administrator (*mayordomo*) was placed over the valley. Nevertheless, "the Inka did not take dominion away from the lords and chiefs"[11] (Cieza, 1984 [1550]: 220, Cap. LXXVIIII), although like all vassals of the empire they were subject to Inka law. The Chincha lords were required to spend several months each year at court in Cuzco. The Inka sent *mitimaes* or *mitmaq*[12] to Chincha (Cieza, 1984 [1550]:220, Cap. LXXVIIII) and took people from Chincha for service elsewhere as *mitimaes*. During the early years of the Colonial Period, there were still *mitimaes* from Chincha in the neighboring valley of Cañete (Rostworowski, 1978–1980:166), and Chincha silversmiths were residing somewhere out of the valley, possibly in the Inka capital at Cuzco (Rostworowski, 1977:234). The "Relación" (Crespo, 1975: 96) also talks of *yanaconas* and *mamaconas*[13] who were placed in the service of the Inka or the sun, but Chincha is not specified in this section. However, the "Relación" (Crespo, 1975:99) does mention "an Indian woman in this valley of Chincha who was designated for the Inka"[14] only a few years before the Spanish conquest. Presumably, this woman was an *aclla* (chosen woman), perhaps one of the virgins who Cieza says were placed in the temple of the sun by the Inka. We cannot know if the *aclla* were from Chincha or from somewhere else.

Some fifty years after Thupa Yupanki's consolidation of the south coast, Chincha fell into Spanish hands along with the rest of the Andean world. By all accounts, Chincha at the time of the Spanish conquest was a marvelous place, famed throughout the Inka empire as a rich and powerful kingdom. Cieza (1984 [1550]:218, Cap. LXXIII) writes of the

> "beautiful and large valley of Chincha, as famed in all of Peru as it was feared in earlier times by most of the natives . . . when the Marqués don Francisco Pizarro with his thirteen companions discovered the coast of this kingdom [the Inka empire], everywhere they said that he should go to Chincha, which was the largest and best of all."[15]

Concerning Chincha itself, Cieza (1984 [1550]:220, Cap. LXXIII) records that "this valley is one of the largest of all Peru: and it is a beautiful thing to see its groves and canals, and how many fruits there are throughout it."[16] When the Inka ruler Thupa Yupanki arrived in Chincha after its people capitulated to him, "on seeing it so large and beautiful, he became very happy" (Cieza, 1985 [1553]:173, Cap. LX).[17]

As Menzel and Rowe (1966:68) point out,

> "Chincha had a notable reputation for wealth in precious metals, especially silver. The members of Pizarro's expedition picked up a report, recorded by Jérez [1862 {1534}:335], that the richest mines of precious metals were at Quito and Chincha."

The record of early Spanish looting in the valley supports Chincha's reputation for wealth. The "Aviso" (Rostworowski, 1970:171–172) states that

> "by order of Hernando Pizarro, [Thomas de Hontiveras and Diego de Mesa] took from the tombs of the dead Indians that were next to the first monastery that Father Fray Domingo de Santo Tomás . . . founded in said valley . . . one hundred thousand marks of silver in large vessels and small ones and other . . . [objects] all in gold and silver. . . . And after that much gold and silver has been taken from that valley and there is much more to be taken. . . ."[18]

Menzel and Rowe (1966:footnote 29) list other early accounts of the looting of Chincha. They also note (Menzel and Rowe, 1966:68) that as late as 1901, silver was still common even in poor graves excavated in Chincha by Uhle (1924; Kroeber and Strong, 1924). Rostworowski (1970:143) points out that the "Aviso" mentions cemetery guards, "which reveals the fear of the lords, since those [pre-Hispanic] times, of the sacriligious robbery of their tombs." (However, the citation concerning guards comes from the part of the document which refers to the Inka empire at large, and not specifically to Chincha.) It is hardly surprising, then, that Chincha was so famous among the Spaniards; precious metals were of paramount importance to the European invaders. For this reason, the early chroniclers may well have overstated the importance of Chincha in the Andean world.

None of the explicitly pre-Inka information discusses the Chincha economy, beyond Cieza's (1984 [1550]:219, Cap. LXXVIIII) general statement that before the expansion of the empire under Pachakuti, "the kingdom of [the Chincha] was always secure and prosperous."[19] Concerning the economic (and related social and political) organization of Chincha

under the Inka, the "Aviso" provides the most information. At the time of the Spanish conquest "there were in the valley of Chincha and its jurisdiction thirty thousand tribute-paying men"[20] ("Aviso," Rostworowski, 1970:170). Lizárraga (1946 [ca. 1605]:90, Cap. XLVII) also mentions 30,000 tribute-payers in his chapter on Chincha, which is a close copy of the "Aviso" (Rostworowski, 1970: 137). In the "Aviso," however, the 30,000 were divided into 12,000 farmers (*labradores*), 10,000 fishermen (*pescadores*), and 6,000 merchants (*mercaderes*) ("Aviso," Rostworowski, 1970:170–171); the missing 2,000 tribute-payers are not mentioned. Lizárraga (1946 [ca. 1605]:90, Cap. XLVII) solved this discrepancy by dividing the population into three groups (farmers, fishermen, and merchants) of 10,000 each, but this version is too neat to be likely. Lizárraga also includes *plateros* (silversmiths) among the *labradores,* whereas the "Aviso" restricts *labradores* to farmers. Each of the groups was apparently specialized.

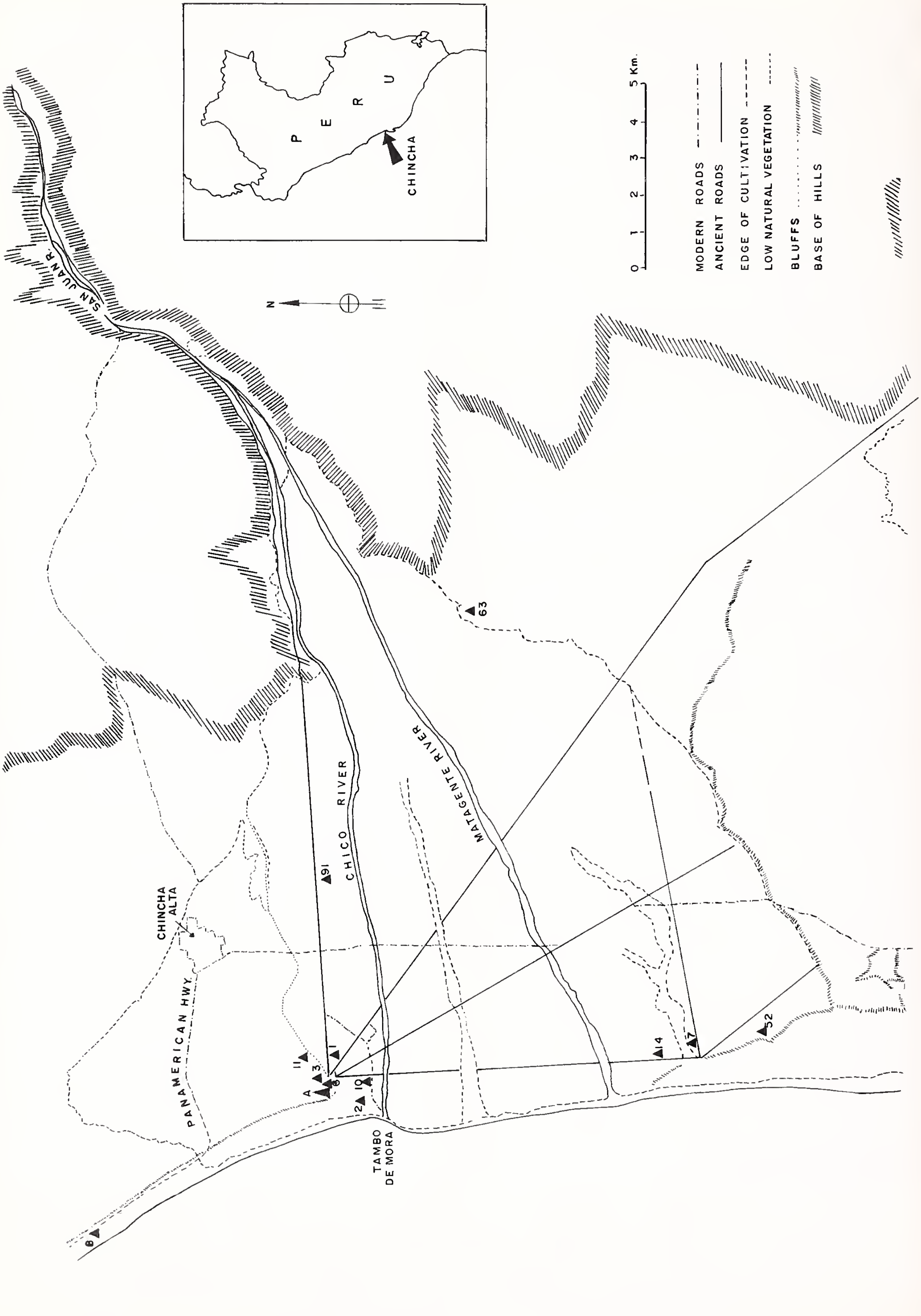
The "Aviso" emphasizes that the 30,000 Chincha tribute-payers were divided into groups of 1,000, each under its own lord; there were "thirty caçiques [lords or chiefs] of said [tribute-payers], each one of whom had one thousand Indians in his charge, and all these thirty were lords"[21] ("Aviso," Rostworowski, 1970:170). The decimal administration system was Inka in origin (Julien, 1988; Murra, 1980: 112); both the "Aviso" and the "Relación" discuss this system in the sections on the Inka empire at large, and the "Relación" (Crespo, 1975:94) quite specifically states that Thupa Yupanki "in imitation of Cuzco divided the Indians and put lords in such a manner that there was a curaca [lord, chief] of a thousand Indians,"[22] with chiefs of 100 Indians under him, and heads of ten below them. It is unclear how strictly the decimal system was followed throughout the empire or how it was implemented in each province (Julien, 1988), but information in the Chincha documents indicates that the lords of the valley were at least nominally organized on this principle: groups of 1,000 are mentioned, the different specialists are counted in multiples of 1,000, and the number of *caçiques* is equal to the total population of Chincha divided by ten (*see above*).

Recalling Cieza's (1984 [1550]:220, Cap. LXXIIII) statement that the Inka left the indigenous lords in power (though subject to Inka rule and law), it seems likely that many of the thirty *caçiques* and their subordinate chiefs were natives of Chincha; however, some may have been lords of the *mitimaes* whom the Inka brought to Chincha. Finally, there was a lord over the entire valley (in addition to the Inka administrator); he is the man who accompanied Atawalpa in Cajamarca in 1532, during the initial encounter with Francisco Pizarro (Pizarro, 1965 [1571]:232).

The documentary data suggest, but do not explicitly confirm for Chincha, that the population of the valley under the Inka was also organized according to a principle of duality. The "Relación" of Castro and Ortega Morejón states that Thupa Yupanki ordered "that in all the valleys there were to be two *parcialidades* [social units] one that was to be called *hanan* and the other *lorin*"[23] (Crespo, 1975: 94). The "Aviso" (Rostworowski, 1970:170) mentions "Lurinchincha," which implies the existence of "hananchincha" and thus some sort of dual division along the lines indicated by the "Relación."[24] One of the two largest Late Horizon site complexes in the Chincha valley (the San Pedro complex, PV 57–7) lies on the southern margin of the valley near the ex-hacienda called Lurinchincha; the other complex is the apparent Chincha capital and Inka administrative center of La Centinela, on the north side of the valley (*see* Chapters 4 and 5 and Fig. 1). The two sites were connected by a straight road which Wallace (1972:3) identified from aerial photographs. San Pedro and La Centinela may represent the nuclei of the two *parcialidades* in late pre-Hispanic Chincha (Wallace, 1991:258).

As Rostworowski (1970) has argued, the "Aviso" clearly indicates that the farmers (*labradores*) and fishermen of Chincha were specialists. The farmers "understood only the planting of maize and other seeds and roots with which they sustain and maintain themselves" ("Aviso," Rostworowski, 1970: 170).[25] The "Relación" of Castro and Ortega Morejón (Crespo, 1975:101–102) discusses tribute paid by the inhabitants of Chincha and neighboring valleys in the form of labor in fields assigned to the reigning Inka, previous Inkas, the sun, and the *huacas.* The fruit of this labor "was put in storehouses from which it was taken to Cuzco and to Jauja and to Pachacamac or wherever [the Inka] ordered it"[26] ("Relación," Crespo, 1975:101). This form of tribute must have been paid by those whom the "Aviso" calls farmers (*labradores*). As we shall see below, the fishermen only fished. The document does not specify the obligations of the merchants in terms of agricultural or other labor beyond their special trade.

Concerning the fishermen, the "Aviso" provides more detailed information:


PERU
CHINCHA
0 1 2 3 4 5 Km.
MODERN ROADS
ANCIENT ROADS
EDGE OF CULTIVATION
LOW NATURAL VEGETATION
BLUFFS
BASE OF HILLS
N
SAN JUAN R.
CHICO RIVER
MATAGENTE RIVER
CHINCHA ALTA
PANAMERICAN HWY.
TAMBO DE MORA
63
16
1
11
3
A
8
10
2
14
7
52
B

"There were settled along the shore ten thousand fishermen, who each day or the better part of the week entered the sea, each with his raft and nets and they left and entered their indicated and known ports, without competing one with the other, because they had in this as in the rest, great order and concert and love and fear of the Inka and their caçiques [lords] and these [fishermen] were settled from two leagues before arriving at Chincha to another part of Lurinchincha [sic], that has from one part to the other five leagues; and the settlement of these people seemed like a beautiful and long street full of men and women, boys and girls, all content and happy because when they were not entering the sea [to fish], all their care was to drink and dance, and so on"[27] ("Aviso," Rostworowski, 1970:170–171).

This citation makes several assertions about the fishermen: 1) they worked only at fishing, while their life on land was happy and carefree; 2) they lived in a separate settlement along the shore; 3) they had their own lords (*caçiques*), presumably lords of 1,000 tribute-payers and lower level chiefs; and 4) the organization and order of their fishing activities were maintained under the authority of the fishing lords and the Inka. The first point makes the specialist status of the fishermen clear; if all they did was fish, dance, and drink, then they could not have worked in the fields or on other local or state corvée labor projects. The second point, residential isolation, is a key factor in enabling arehaeological identification of this segment of the Chincha population (*see* Chapter 5). The fishermen are the only group of Chincha specialists whose settlement is described and located in the documents. Concerning the third point, the "Aviso" numbers the specialist groups in multiples of 1,000 (*see above*); probably the lords of 1,000 tribute-payers were counted instead of individuals. This, in turn, implies that the 10,000 fishermen had ten major divisions and that these divisions were organized politically as well as economically. Given that the decimal system was an Inka imposition, it is clear that the Inka had restructured the fishing groups—at least nominally—by the time of the Spanish conquest; the same conclusion applies to the farmers and merchants.

The third Chincha economic group mentioned by the "Aviso" is the merchants. Rostworowski (1970: 135) considers the information on this group as the most original and important part of the document, and she presents a detailed analysis of the evidence for merchants in the Andean world (Rostworowski, 1970:145–157). Limiting ourselves to what the "Aviso" says, we learn that the 6,000 merchants of Chincha traded south to Cuzco by land and north to Puerto Viejo and Quito in Ecuador, presumably by sea to Puerto Viejo and then inland to Quito (Rostworowski, 1970:171). The land trade to the south most likely would have involved llamas for transport; Cieza (1984 [1550]:220, Cap. LXXVIIII) refers to the many camelids in Chincha before the civil wars among the Spanish Conquistadores. The large number of merchants listed in the "Aviso" suggests to Rostworowski (1970:155–156) that inland trade involved porters as well as llamas.

The maritime trade presumably used balsa trading rafts similar to that seen by Bartolome Ruyz off northern Ecuador during Pizarro's second expedition, in 1525 (Samano-Xérez, 1967 [1527–1528]: 65–66). Recounting the events in Cajamarca in 1532 when Atawalpa (the Inka ruler) met and was captured by the Spaniards, Pedro Pizarro (1965 [1571]: 232) wrote that Atawalpa told him of his great friend the lord of Chincha, who had "100,000 balsas [trading rafts] on the sea." Although necessarily an exaggeration, this association of the lord of Chincha with balsas and with the Inka ruler demonstrates that Chincha was involved in significant maritime activities under the Inka.

The "Aviso" lists some of the goods traded by the Chincha merchants; from Ecuador they brought "many beads of gold and many rich emeralds, which they sold to the caçiques of Ica"[28] ("Aviso," Rostworowski, 1970:171). Rostworowski (1970:152) believes that another, perhaps the major, product brought from the north was *mullu* or *Spondylus* shell. This red and white bivalve is indigenous to the warm waters of Ecuador, and it played a very important role in agricultural rituals throughout the Andes (*see* Chapter 9, section on mollusks). However, the "Aviso" does not actually mention *mullu* at any

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Fig. 1.—Map of the Chincha valley, Peru, showing principal geographic features and archaeological sites mentioned in the text. Adapted from Wallace (1971:endpiece). Modern towns and geographic features are named on the map. Numbers are PV 57–site codes from Wallace's (1971) survey report; letters are sites not listed by Wallace. Site codes: A = Lo Demás; B = Jahuay; 1 = La Centinela; 2 = Huaca de Tambo de Mora; 3 = El Cumbe; 6 = Uhle's Cemetery B; 7 = San Pedro complex; 10 = Huaca del Alvarado (Uhle's Site D); 11 = Uhle's Cemetery E; 14 = Ranchería; 52 = Pozuelo; 63 = unnamed; 91 = Huacarones.

point. The document is silent as well concerning the goods acquired in the south.

The "Aviso" offers the surprising news that of all the Inka empire, only the Chincha merchants used a form of money; "among themselves they bought and sold with copper what they had to eat and to clothe [themselves]"[29] ("Aviso," Rostworowski, 1970:171). Each piece of copper had a fixed value and gold had a fixed exchange rate with silver.

What the "Aviso" does not tell us is that the merchants were pre-Inka in origin. Rostworowski (1970:144, 1988*a*:103)[30] believes this to be the case; her logic is twofold. First, she argues that Chincha capitulated peacefully to the Inka because they wanted to avoid disruption of their profitable trading activities. Second, believing that *Spondylus* was the principal trade item acquired in the north, she argues that the Inka would have allowed the Chincha merchants to continue their activities in order to assure adequate supplies of the sacred *mullu* (the northern habitat of this shell was incorporated into the Inka empire only very late in its history). Thus, Rostworowski (1970:144) sees the Chincha merchants under the Inka as "a last trace of former times," a sort of necessary evil in an imperial economy based mainly on state-administered redistribution.

Although Rostworowski may be correct concerning the pre-Inka *origins* of the Chincha merchants, several features of the documentary and archaeological records suggest that Chincha's long-distance trading expanded greatly under Inka rule, and that the possibility of *increased* (as opposed simply to continued) trading activity was one of the inducements to capitulate to Thupa Yupanki. Of the foreign (non-Chincha) pottery identified by Menzel (1966) from the Uhle Chincha collections (*see* Chapter 4), virtually all pieces come from contexts postdating the Inka conquest of the valley. The "Relación" of Castro and Ortega Morejón ("Relación," Crespo, 1975:93) says that before the Inka, the south coast polities lived in a state of constant warfare, and that the Indians did not

> "pass from one part to another nor know—unless by hearsay—that there were more people because if they passed if it was not in time of peace and treaties they killed one another."[31]

Even with occasional moments of peace, such a situation would have been far less conducive to successful trading than would a privileged status under the *pax incaica.*

Also problematic for assigning Chincha a major role in pre-Inka long-distance trade is the presence of the powerful Chimu kingdom on the north coast, squarely on the path to Ecuador. If *Spondylus* was the major item acquired in the north by the merchants, why is it so common in the late pre-Hispanic sites of the north coast—Chimu territory—and so rare in Chincha, where its known archaeological occurrences are exclusively Inka in date?[32] Shimada (1991:LIV) suggests that

> "the emergent Chimú state probably came to be the principal North Coast sponsor of maritime trade . . . while the specialized Chincha traders described in a colonial document . . . managed the actual operation of the trade, including navigation."

This hypothesis accepts the pre-Inka existence of the Chincha traders as given, and fails to account for the pre-Inka absence of northern items in Chincha. Also, Shimada does not explain why the Chimu would rely on traders from another region when it surely had a well-developed seafaring capacity; cargo-carrying rafts appear in North Coast art as early as Moche V, ca. A.D. 600–750 (McClelland, 1990), and nothing in the iconography suggests that they are foreign vessels.

Unlike Chincha, Chimu resisted Inka rule and as a result was severely reduced in power and extent after its defeat (*see* Netherly, 1977:313–314 ff., 1988*a*:115–122). According to Cieza (1985 [1553]: 169–173, Caps. LIX–LX), Thupa Yupanki conquered Chimu not long before he turned to the south coast and incorporated Chincha into the empire. Referring to Chincha's peaceful capitulation to the Inka, Netherly (1988*a*:111) remarks that "it would be of great interest to know the nature of the deal that was made." As part of the deliberate destructuring of the Chimu kingdom, might not Thupa Yupanki have offered the lords of Chincha trading rights which were formerly the prerogative of Chimu? Such an offer would have made peaceful capitulation an attractive prospect (Sandweiss, ms.); Hyslop (1984: 102) also suggests that "the power and prestige of Chincha actually increased during the period of Inka alliance/domination."

In addition to the farmers, fishermen, and merchants, the "Aviso" lists a number of artisans and others who carried out specialized work, including servants in *tambos* (Inka state installations), bridgekeepers, *chasquis* (messengers), *huaca* and cemetery guards, herders, carpenters, sling-makers, sling-stone gatherers, makers of fine clothing, metalsmiths, and miners ("Aviso," Rostworowski, 1970:167–169). All

of these *oficiales* (specialists) are mentioned in the part of the document which refers to the Inka empire in general. The makers of fine clothing are specified as *serranos* (highlanders). Both the highlands and the coast had herders. Miners were to be recruited from the natives of lands which had gold or silver mines. For the other *oficiales,* the "Aviso" provides no clue as to their distribution within the empire. However, Falcón's 1571 list of "offices and things in which they served the Inka,"[33] transcribed by Rostworowski (1977:248–250), includes the following occupations of the coastal Indians also cited in the "Aviso": miners, makers of fine cloth, fishermen, potters, carpenters, and farmers. The section on highland occupations lists all of these coastal *oficiales* except the fishermen. Falcón also lists a wide variety of other coastal and highland *oficiales.*

In general, the Inka ordered "those who were *oficiales* to pay tribute in the thing of their office and no other"[34] ("Aviso," Rostworowski, 1970:169). The "Aviso" (Rostworowski, 1970:168–169) provides specific examples of *oficiales* tribute obligations vis-à-vis the Inka state.

The document granting the Indians of Chincha in *encomienda*[35] to Hernando Pizarro (Rostworowski, 1977:234) mentions Chincha silversmiths living outside of the valley as *mitimaes*; as Rostworowski (1970:159) notes, Lizárraga (1946 [ca. 1605]:90, Cap. XLVII) wrote early in the 17th century that "among these laborers [of Chincha] there were some artisans [who were] good silversmiths and today there are still some."[36] I know of no specific *documentary* evidence for other categories of artisans in Chincha.

The Chincha Economy: Ethnohistoric Model One

According to sources referring specifically to Chincha under Inka rule, the population of Chincha was composed of three major groups: the farmers, the fishermen, and the merchants. The farmers and the fishermen were definitely specialized, working at and paying tribute only through the activities of their specialty; presumably, the merchants were similarly specialized. The fishermen (at least) had their own settlement, separate from the rest of the population. There may have been specialists (*oficiales,* e.g., artisans, herders) other than fishermen, farmers, and merchants in Chincha, but we can be sure only of the silversmiths. Each of the specialized groups was organized according to the Inka decimal system into units of 1,000 tribute-payers, with a hierarchy of lords and headmen leading nested divisions of 1,000, 100, and 10 tribute-payers. The valley as a whole was subject to the lord of Chincha as well as to the Inka administrator. The people of Chincha bought and sold food and clothing with copper pieces. Also present in the valley were *mitimaes* colonists from unspecified areas and in unknown numbers, and *aclla* living in the temple of the sun and working for the state. In addition to the contacts with other areas of the empire through participation in the activities of the state (e.g., sending tribute to Cuzco and elsewhere), the Chincha had two other modes of long-distance contact: their spetial connection with the central coast shrine of Pachacamac, and the trading expeditions of the merchants north to Ecuador and south to the highlands around Cuzco.

This rather simple picture raises many unanswered questions. How were the farmers, fishermen, and merchants integrated into a single polity? Was copper money really in use, or were there other mechanisms of exchange among different segments of the Chincha population? Which of the coastal occupations other than farmers, fishers, merchants, and silversmiths were present in Chincha? The documents do not tell us how the Chincha artisans were organized, nor how they interacted with the other groups. How did they fit into the decimal structure? Are they the missing 2,000 tribute-payers in the "Aviso's" account of the 30,000 Chincha *tributarios*?[37] Even if the general sections of the "Aviso" are taken to apply to Chincha, we learn only that *oficiales* paid tribute in their specialized product or service; some worked fields for their own support, while others apparently did not. We do not know if the Inka administrators had *yana* (male retainers) working for them, nor if they gave *aclla* and *yana* to the local lords (a common practice according to the "Relación" [Crespo, 1975] and other sources (*see* Murra, 1980:Chapter VIII). And, of course, to what degree does the ethnohistoric "picture" of Chincha reflect pre-Inka conditions? Some of these questions will remain unanswered, but the following sections and chapters shed light on many of them.

The North Coast

The picture of the late pre-Hispanic Chincha economy reconstructed above from purely local sources is rather simple; an examination of the contemporary north coast record offers a more complex picture, but one which must be applied even more tentatively to Chincha prior to archaeological testing.

Sources

Known ethnohistoric sources for the north coast of Peru are more abundant and varied than the south coast documents. In addition to the chroniclers, there are a number of *visitas* (inspections) and other legal and administrative documents which provide a wealth of information on the area. In this section, I rely on several recent, detailed studies of north coast ethnohistory (Hart, 1983; Netherly, 1977, 1984; Rabinowitz, 1983; Ramirez-Horton, 1982; Rostworowski, 1977, 1981), in part because so many of the data cited by these authors are otherwise unavailable.

Many of the same caveats concerning Inka and pre-Inka information discussed above in the case of Chincha also apply to the north coast data (Hart, 1983:126; Netherly, 1977:292). The information in this section can be taken as reflecting conditions under Inka rule. The nature of the pre-Inka (Chimu) structure is left open for the moment; I will return to this issue in Chapter 12.

The Late Pre-Hispanic North Coast

The economic organization of the north coast of Peru in the period just preceding the Spanish conquest was based on occupationally-defined groups, as at Chincha; more such groups are named. The documentary data for the north coast offer more explicit definitions of the structure and interrelations of these specialists.

Netherly (1977, 1984:229–234) has shown that duality was the dominant organizing principle of north coast *parcialidades* (basic social and economic units subject to a local level lord). This duality operated at several hierarchical levels. "At the primary or lowest level the *parcialidades* were grouped by economic activity," with the most common being the farmers, followed in number by the fishermen and then the other specialists. However, "the presence of both fishing and farming groups was considered to be necessary and an integral component of higher levels of organization" (Netherly, 1984: 231). The relationship of paired groups at each hierarchical level was asymmetrical, with the lord of one half subordinate to the lord of the other half. At the highest level within each pre-Hispanic polity or Spanish *repartimiento* (Spanish administrative units roughly parallelling preconquest polities within the Inka empire), there was a paramount lord or *caçique principal* (Netherly, 1984). Hart (1983:253–254) writes that "in general, specialist groups seem to have been subordinate to a *caçique principal* whose closest affiliation (i.e., his particular *parcialidad*) was with agriculturists."

Ramirez-Horton (1982:125, Table 1) lists 24 categories of artisans/specialists known from one or more 16th century sources for six north coast polities in the area of present-day Pacasmayo and Lambayeque. Among these categories are the fishermen and merchants also named in the "Aviso" for Chincha (farmers are not listed here, as they were considered to be generalists). Fishermen are the only specialists known from all six polities, and they generally appear in the earliest source for each area. Of the categories of specialists named in the general section of the "Aviso," the carpenters, potters, herders, metalworkers (silversmiths), shoemakers, and various categories of clothing makers are also listed for the north coast polities; in other words, all of those specialists from the "Aviso" who might be considered as artisans or craftsmen.

Hart (1983) offers two useful criteria for classifying specialists on the north coast. The first criterion is whether or not the specialists were associated directly with the lords:

> "The first category is those specialists who were directly associated with a *caçique*. They either acted as agents of the *caçique* or were important to the enhancement of his status. Included in this status are the cooks and hammock bearers, at least some of the chicha [corn beer] makers, silversmiths, merchants (Ramirez-Horton, 1982), textile workers, and other producers of luxury goods. The second type of specialist was of importance to the economic life of the *repartimiento* or valley, but apparently was not directly associated with the *caçiques* . . . Such specialists included fishermen, saltmakers, carpenters, spindle makers, potters, basketmakers, shoemakers, and deer hunters" (Hart, 1983:255).

The specialists of the second category often had their own settlements, usually located near the specialized resource which they exploited (Netherly, 1977: Chapter VI, *passim*). Fishermen, in particular, lived near the shore, apart from other groups. Ramirez-Horton (1978:90–92; *see also* Rostworowski, 1981: 116–117) cites a 1572 document for the Saña valley which discusses several settlements, including Cherrepe, a village of fishermen located near the sea.

The specialists' lords sometimes held high rank in their polity. For instance, Hart (1983:240) refers to a *caçique principal* of the fishermen of Malabrigo, in the Chicama valley, who was probably the number two lord in the local hierarchy. Given such high rank, lords of Hart's second category of specialists

(e.g., fishermen) probably had attached specialists of the first category (e.g., cooks, silversmiths).

Hart's (1983) second criterion for classifying north coast specialists is whether or not they farmed in addition to carrying out their specialized activity:

> "Included in the group who cultivated no lands were cloth painters, potters, fishermen, merchants, *chicha* makers, and saltmakers. Cooks, mat makers, and deer hunters, however, also worked lands in addition to their respective specialized activities. . . . Whether or not other specialists did or did not have lands cannot be demonstrated from the available data" (Hart, 1983:268).

This division is essentially that between full-time and part-time specialists.

There is some overlap in the categories of specialists which Hart could classify according to the two sets of criteria (cooks, fishermen, saltmakers, potters, and *chicha* makers). Those who did not work land were most often in the group of those specialists not directly associated with the *caçiques*; thus, the fishermen were independent specialists who did not farm. The specialists who also cultivated lands included one of the categories (cooks) directly associated with the *caçiques*.

Members of all households carried out some specialist activities on a domestic level. Certainly, every domestic unit included one or more persons who cooked. The women of the north coast agricultural households engaged in cloth production (Netherly, 1977:249), though it is not clear if the women in fishing households also wove. Some of the 16th century petitions by fishermen talk of trading fish for cotton, among other necessities (e.g., Netherly, 1977: 241). Was this cotton only for nets, or also for cloth?

The specialist status of the north coast fishermen is particularly well attested in the ethnohistoric record. Hart (1983:272–273, 276–277), Netherly (1977: 237–241), Ramirez-Horton (1982:128–129), and Rostworowski (1977:222) all cite and cross-cite 16th century petitions from fishermen stating that the fishermen had no (or few) fields, that they paid tribute in fish, and that they earned their living by fishing and trading fish for their other necessities. In these documents, the fishermen generally petition to be freed from agricultural tribute and/or for permission to move about in order to trade their fish with neighboring villages and *repartimientos*. In one court case from 1595 (Hart, 1983:276–277), fishermen from the town of Moche in the north coast Moche valley testified that they went to Simbal in the middle valley to exchange fish and other items.

The petitions were most often presented by men who identified themselves as lords (*principales*) of fishing groups. Like the Chincha fishermen in the "Aviso," the north coast fishermen had, in the words of a fishing *principal* in 1566, "known and private places" where each group fished[38] (Rostworowski, 1977:225). The north coast fishermen apparently had their own dialect, referred to in the early documents as "pescadora" (Rabinowitz, 1983; *see also* Netherly, 1977:90–91; Rostworowski, 1981:95–100).

The evidence for merchants on the north coast has been discussed in detail by Netherly (1977:252–270), Ramirez-Horton (1982), and Rostworowski (1977:257–260). Virtually all of the data concern what Netherly (1977:Chapter VI, *passim*) calls intraregional exchange and are limited to the Lambayeque area discussed by Ramirez-Horton (1982; Netherly, 1977:254). In addition to the exchange of specialized produce between the various specialist groups, such as the fishermen discussed above, there were also *parcialidades* specialized in exchange itself; these groups did not plant fields (Netherly, 1977: 255–258).

Evidence for long-distance exchange such as that which the "Aviso" describes for the merchants of Chincha is tenuous at best, and concerns only coast–highland exchange (Netherly, 1977:258–270).

Most of the information on the merchants comes from the mid-16th century, and Ramirez-Horton (1982) has questioned the exact nature of these groups during pre-Hispanic times. She suggests that

> "what the Spanish early identified as merchants might have been in reality *mitayos* (temporary drafted laborers) or porters, retainers of the lords, carrying tribute and supplies between the various settlements within a lord's jurisdiction for distribution or storage" (Ramirez-Horton, 1982:132).

If this was the case, then the north coast merchants of the Late Horizon were agents of the lords or the state, and not independent traders. If the long-distance merchants were retainers of the highest lords, that would account for their scarcity at the time of the Spanish conquest; it was the Chimu state apparatus which the Inka dismantled most thoroughly. This scenario would provide a rationale for the replacement of Chimu traders with Chincha merchants by the Inka, as suggested above.

The nature of tribute provides a final point of interest concerning north coast organization. In their petitions to the Spanish officials, the specialists tend-

ed to claim that they paid tribute in their specialized produce, and not in agricultural or other general labor for the lords or the state. This is particularly true of the fishermen (*see* references cited above). The farming segment of the population provided most of the tribute in agricultural and construction corveé labor (Netherly, 1977:235). To mobilize both general and specialist labor, the lords

> "had the obligation to provide the implements—and for the planting, the seed—necessary for the task, in addition to food and drink for the workers" (Netherly, 1977:213).

Drink (*chicha*) was of particular importance: Netherly (1977:216–217) cites several documents in which the native informants say that without *chicha,* "the Indians would not obey their lords."

Chincha as a Coastal Economy: Ethnohistorical Model Two

Combining the data from the north coast and Chincha allows a more detailed reconstruction of coastal organization. Following are the principal features:

1. The population was divided into groups according to occupation. In addition to the farmers, fishermen, and merchants, there were a number of other, smaller specialist groups, such as the silversmiths. The large groups and those of the smaller ones requiring access to geographically restricted resources lived in their own settlements apart from the other groups.

2. Each group had its own lord or lords (depending on size).

3. The lords and their groups were organized into pairs, with one half of each pair subordinate to the other. This duality operated at several hierarchical levels; how it articulated with the Inka decimal organization is unclear. At the lowest level, pairs included different specialities. At the highest level was the paramount lord of the valley or polity. The Inka administrator was separate from this hierarchy.

4. Each group acquired the necessities which it did not produce by trading its products with the other groups (e.g., fishermen trading fish with the farmers for plant food or cotton). Some items may have circulated through state or local redistribution. The latter case is most likely when the Inka administrator or the local lords needed to mobilize general labor for farming or construction, or specialist labor to produce craft goods, *chicha,* etc., for the state.

5. Higher level lords (*caçiques principales*) often had some attached specialists, such as cooks, textile makers, and *chicha* makers, who produced the items required to maintain the lords' status.

This model corresponds to a large degree with the earlier version based strictly on the Chincha data; the differences arise a) from very specific Chincha data which are not treated in the north coast literature, such as the presence of long-distance traders or the use of copper money; or b) from the greater detail available in the north coast record concerning many aspects of organization, such as the asymmetrical pairing of *parcialidades* or the integration of the different specialists in such pairs. I have not repeated the information on the *mitimaes, yana,* or *aclla,* or on tribute to Cuzco, as these issues are general to all areas of the Inka empire, and are sufficiently documented in the Chincha record.

Combined with the specifically Chincha features of the first ethnohistoric reconstruction, the above model provides a system to be tested with the archaeological data on the Chincha fishermen presented in Chapters 5 through 11.

CHAPTER 3

SPECIALIZATION AND THE ARCHAEOLOGY OF CHINCHA FISHERMEN

Specialization was an important feature of all late pre-Hispanic Andean economies, both in the highlands and on the coast. Costin (1986:328) has recently defined specialization in this context as "the regular, repeated provision of some commodity or service in exchange for some other. These [commodities or services] may include productive resources, subsistence goods, craft items, or labor." According to the ethnohistoric record (Chapter 2), the primary commodity supplied by the Chincha fishermen was fish, a subsistence good, taken from the sea, a geographically restricted productive resource. The documents state clearly that the fishermen did not provide labor as a commodity. However, within the general rubric of specialization, there is room for significant variation. Part one of this chapter looks more closely at the parameters of this variation as seen in the two ethnohistoric models

of fishing specialization presented in Chapter 2. Part two outlines the archaeological expectations for the Chincha fishing settlement, and part three discusses the archaeological methodology used in this study.

Specialization

Following Brumfiel and Earle (1986), Costin (1986:330) defines

> "four parameters which characterize the organization of [specialized] production . . . (1) the context of production; (2) the relative geographic concentration of productive activities; (3) the constitution of productive units; and (4) the degree of specialization. Each of these parameters is actually a continuum between two opposite states."

For a detailed review of these parameters, the reader is referred to Costin (1986:Chapter VI) and Brumfiel and Earle (1986). Here, I locate the ethnohistorically described Chincha fishermen (Chapter 2) along these continua, first using Model One, which refers exclusively to Chincha, and then the more general Model Two, which incorporates the north coast record. A third alternative is that both ethnohistoric models are wrong and the fishermen were not specialists, or else they were specialized in a way not indicated by the documents.

For each of Costin's parameters, the two ethnohistoric models generate overlapping but not fully coincident sets of archaeological expectations; analysis of how the archaeological data from Lo Demás meet these expectations provides a powerful tool for contrasting and evaluating the two models.

Context of Production

The two states, or poles, of this parameter are independent and attached specialists. According to Brumfiel and Earle (1986:5):

> "*Independent specialists* produce goods or services for an unspecified demand crowd that varies according to economic, social, and political conditions. In contrast, *attached specialists* produce goods or provide services to a patron, typically either a social elite or a governing institution."

Following Model One, the Chincha fishermen are closest to the attached pole; they produced fish for tribute to a governing institution, the Inka empire. Although the fishermen probably originated as independent specialists, during the Late Horizon their status as specialist tribute-payers moved them towards the attached pole.

The situation of the fishermen in Model Two is more complex. First, they produced fish not only for tribute, but also for local exchange (like independent specialists) without the intermediacy of the governing institution. Second, the lords of the fishermen had their own attached specialists providing services and producing goods other than fish. In this model, the fishermen occupy several places simultaneously on the independent–attached continuum.

Concentration of Production

This parameter runs from dispersed to nucleated specialists. Costin (1986:336–337) defines the two poles of this continuum in the following way:

> "At one extreme are specialists who are evenly distributed among the population. . . . At the other extreme, specialists may be aggregated such that many producers or workshops are located at a single community within a region."

The Chincha fishermen in Model One clearly tend towards the nucleated pole; even though their settlement was geographically extensive, it was nucleated in political and economic terms. In Model Two, the fishing population as a single political and economic unit was nucleated as in Model One; however, *within* the fishing group were dispersed, nonfishing specialists—those attached to the fishing lords.

Constitution of Production Units

According to Costin (1986:338), "size and the principles of labor recruitment" are the variables which determine placement on this continuum.

> "Size reflects the actual number of individuals. . . . The principles of recruitment reflect the way producers are brought into the production system. At one extreme are small, family-based production units. At the other extreme are the wage-labor forces of the industrial west, where employment is contractual in nature and based on skill and availability" (Costin, 1986:338).

Model One offers little information on the principles of recruitment; the size of the fishing population—10,000 tribute-payers and their families—is quite large for a preindustrial society and would suggest placement of the Chincha fishermen towards the labor force side of the scale. However, the "Aviso" (Rostworowski, 1970:170) says that *each* fisherman went out with *his own* raft and nets, suggesting that the organization of fishing labor at the polity level was simply individual (family-based) organization multiplied many times.

Model Two is not relevant to the size of the Chincha fishing population. It does provide indirect evidence on labor recruitment; the use of a separate fishing dialect, *pescadora,* strongly suggests that fish-

ing labor was recruited through social reproduction and not by contracting workers from a general pool.

Degree of Specialization

This parameter runs from part-time specialization, in which producers of basic subsistence goods produce commodities or provide labor in "spare" time, to full-time specialization, in which the producers of a particular good or service "work exclusively at one task, exchanging [this good or service] for all other goods and services used by the household" (Costin, 1986:342–343).

In terms of degree of specialization, the Chincha fishermen in Model One are located at the full-time specialists pole. The "Aviso" (Rostworowski, 1970: 170–171) states quite clearly that the only work they did was to fish. According to Model Two, however, the fishing lords had attached specialists (other than the fishermen), some of whom worked full time and some of whom worked part time.

Specialization Parameters and Archaeological Expectations for the Chincha Fishermen

Parameters of Specialization—Summary

The two ethnohistoric models of coastal organization (Chapter 2) place the fishermen of Chincha in somewhat different positions in terms of the parameters of specialization discussed above. In brief, according to Model One, the fishermen were attached specialists working for the state, concentrated in a nucleated community, with production units consisting of aggregates of individual producers, all of whom worked full time at fishing.[39]

Model Two differs from Model One because it recognizes more hierarchical levels within the fishing population. Thus, the fishermen in this model were still attached specialists in relation to the Inka state and probably to their local paramount lord, but at the same time, they were independent specialists in regards to their direct exchange of products with other local producers. In Model Two, the fishing population can also be seen as a small scale version of the polity or even the imperial structure, in that the fishing lords had their own attached specialists. Both models indicate a nucleated fishing population; Model Two, however, has a subdivision of this population into the fishermen and the other specialists attached to fishing lords. Units of production presumably still consisted of aggregates of individual fishermen working full time and recruited by birth, with the addition of the full- and/or part-time specialists attached to the lords.

Archaeological Expectations

According to Model One, the fishing settlement should be geographically discrete and should contain evidence only of fishing. As specialists attached to the paramount lord of Chincha and to the Inka state, the settlement should contain some evidence of links with these elites/governing institutions. Model One also specifies that the fishermen had their own lords, so the fishing settlement should include both elite and commoner sectors. With individuals or families as the basic units of production, the evidence for fishing should be evenly distributed throughout the settlement.

The archaeological expectations for Model Two are more complex. The fishing settlement should still 1) be geographically discrete, 2) have evidence of links with the governing institution(s), and 3) have elite and commoner sectors. Within the commoner sector, evidence for production should still be evenly dispersed, but in the elite sector, there should be evidence of the activities of specialists attached to the fishing lords, as well as of the activities of the lords themselves. In both models, all sectors should have evidence of exchange with other local specialists. There should be evidence of continuity through time in group identity.

To the extent that the archaeological data fit one or the other of the two sets of expectations, they will support either Model One or Model Two. To the extent that the data deviate from both sets of expectations, they will suggest problems with the ethnohistoric data. Deviations from these expectations could arise from two basic causes: 1) The fishermen were specialists, but their organization differed from that indicated by the documents (i.e., they occupied different places on the specialization continua than those listed in the previous section). The utility of the parameter approach is that it provides an open-ended set of alternative hypotheses to explain data which deviate from the models under consideration; or 2) The fishermen were not specialists.

Methodology for the Recognition of Specialization

Using the set of expectations discussed above requires a methodology for recognizing specialization in the archaeological record. Many archaeologists have approached this problem (e.g., papers in Brumfiel and Earle, eds., 1986); all of their methodologies

rely on the contextual analysis of the tools of production and/or the products of the hypothesized specialists found in or on archaeological sites of various kinds.

In late pre-Hispanic coastal Peru, the presence or absence of specialization can be analyzed 1) by studying the artifact and utilized resource inventories at sites hypothesized to be specialized, with particular attention to intrasite distribution; 2) by comparing these inventories between contemporaneously occupied sites presumed to be of different specialists; and 3) by reconstructing the sites' locations at the time of occupation relative to arable land, rocky and sandy shoreline, and other resources.

For the Chincha fishing site, the artifact inventory should contain fishing tools such as nets and hooks; although not mentioned in the ethnohistoric documents, artifacts used in domestic activities (such as cooking pots) should also be present. Categories of tools used neither in fishing nor in domestic tasks would provide evidence of other production. The context of such tools would discriminate between specialists attached to the fishing lord (Model Two), nonspecialization of the fishermen (null hypothesis), or possibly dispersed specialization as described in the "concentration of production" parameter.

The utilized resource inventory of a specialist settlement should include a wide variety of products, among them items not produced by resident specialists. To fit Model One, detailed examination of the utilized resources in the fishing site should indicate that fishing products were processed by the site's inhabitants, but that other items were brought in in a processed state from elsewhere. Contemporary nonfishing sites should have a qualitatively similar assemblage, but one that indicates a productive activity other than fishing. As with the artifact inventory, the utilized resource inventory can serve to discriminate between the alternative models for the specialization of the fishermen; depending on context, the presence of processing by-products of materials other than fish can provide evidence for specialists attached to the fishing lords, for nonspecialization of the fishermen, or for a dispersed pattern of specialization. The absence of such products anywhere in the fishing site would support the strict specialization model (Model One).

Another crucial issue is the difference between what Muller (1986:15) has referred to as " 'site specialization' (limited activity sites) and actual 'producer specialization'." Both ethnohistoric models for the Chincha fishermen clearly describe producer specialization; to test for this aspect of the models, it is necessary to show that the fishing site was not a limited activity area, i.e., that it was occupied year-round and that its inhabitants carried out a full range of domestic activities in addition to their specialized production. Evidence for domestic activities would include dwellings, cooking vessels, food remains, etc. Year-round occupation can possibly be checked through analysis of organic and other remains (Rafferty, 1985:129–137), though this has seldom been done on the Andean coast (*see* Griffis, 1971, for one attempt). The depositional history at a site can also provide clues to seasonality in environments in which seasonal abandonment would produce a characteristic deposit such as wind-blown sand (*see* Chapter 5).

A final procedural point involves data gathering. The two basic choices are surface collecting and excavating. Each has advantages and drawbacks, and the choice of approach must be tailored to the research problem, to the specific methodology to be used, and to the conditions of the individual site or region. Surface collecting (e.g., Brumfiel, 1980) is useful only if the analytic procedure involves tools but not organic remains, and if the conditions of preservation are such that reliable associations can be found in surface contexts. The advantage of surface collecting is that large areas can be covered quickly and inexpensively.

Excavating provides better contexts and, depending on the choice of site-type, a wider range of materials including organic remains. Burials can provide good collections of tools; in the Andes, it is likely that tools were buried with their users, and analysis of the bodies can corroborate conclusions concerning an individual's activities during life. However, burials are unlikely to provide processing debris or other direct evidence of daily life. Another drawback to burials is that a study of specialization requires a cemetery with a large population and good preservation. Workshops and habitation areas provide good context, temporal control, and a wide variety of materials. The primary disadvantage of such sites is that they are time-consuming and expensive to excavate and analyze. Thus, studies based on workshop/habitation site excavation tend to suffer from limited sample size. Nevertheless, the methodology used in this study requires samples of organic remains and artifacts and secure context for all materials; workshop/habitation site excavation was selected as most appropriate.

CHAPTER 4

THE ARCHAEOLOGY OF CHINCHA

The Chincha Valley

The Chincha valley is located on the Peruvian coast about 200 km south of Lima, between approximately 13°20′ and 13°35′ south latitude and 76°00′ and 76°12′ west longitude (Fig. 1). The valley is part of Chincha Province, the northernmost province of Ica Department.

The Chincha valley is watered by the San Juan River, which exits from bedrock 20 km east of the shoreline and splits into two branches, the Río Chico to the north and the Río Matagente to the south (Fig. 1). The bifurcation of the San Juan marks the beginning of the lower valley; the following descriptions refer only to the lower valley, the area of concern in this study, and the meteorological data are from a station which is geographically analagous to Lo Demás, the Chincha fishing site.

From less than 2 km wide at the bifurcation of the San Juan River, the Chincha valley opens abruptly to more than 15 km at the shoreline. Based on aerial photographs taken in 1962 and field work carried out in the 1960s, the total area of the valley was calculated as 30,716 hectares, of which 22,247 (72.4%) were in agricultural use at the time of the study (ONERN, 1970, Volume II:Map 5). According to Romero (1953:96, cited by Menzel and Rowe, 1966:70), at midcentury Chincha ranked sixth among all Peruvian valleys and first among those south of Lima in terms of agricultural production.

Both of the distributaries of the Río San Juan (the ríos Chico and Matagente) are seasonal, with significant flow only in the Peruvian summer (December to April); both branches are often dry during the rest of the year (ONERN, 1970, Volume II:58). The lower Chincha valley lies wholly within the Pre-Montane Desert ecological formation (ONERN, 1970, Volume I:47–48, Map 2). General characteristics of this formation include an arid to "semi-*calido*" climate; irrigation required year-round for agriculture; alluvial, colluvial, and lithosolic soils; and variable topography (ONERN, 1970, Volume I:46). The average annual temperature in the lower valley is 19.1°C, with a peak around 23°C in January to March and a low of 17° to 18°C from June through October. In the absence of an El Niño event, average annual precipitation is 0 mm, though the average annual relative humidity is 81% (ONERN, 1970, Volume II:10–12 and Map 1).

According to the ONERN study (1970, Volume I:68–69, Map 2), the lower Chincha valley is completely covered with Quaternary deposits. The central portion of the lower valley, around the Río Chico and the Río Matagente, is composed of Holocene channel and floodplain deposits. On the north side of the valley, from about a kilometer north of Tambo de Mora to the Quebrada Topará, the Pleistocene Topará Formation of intercalated sands and clays crops out in a 6 to 8 km wide belt. The west face of this outcrop forms a 30 m or higher bluff that may mark a north–south trending fault; the beach lies less than a kilometer to the west. A bluff also delimits the Topará Formation on the south, overlooking the floodplain. The area covered by this formation is referred to locally as the *meseta* or tableland of Chincha Alta. Inland from the Topará Formation and on the southern edge of the valley are Quaternary alluvial deposits.

The modern population center in the valley is the town of Chincha Alta, located on the north side of the valley about 5 km from the shore (Fig. 1). Other important modern settlements include the port of Tambo de Mora, Chincha Baja, and El Carmen.

History of Archaeological Research in Chincha

Archaeological research in the Chincha valley began in 1901 with Max Uhle's excavation of late pre-Hispanic burials at six sites (A to F, Kroeber and Strong, 1924:Plate 1) in the general vicinity of Tambo de Mora and along the edge of the Topará Formation (Kroeber and Strong, 1924; Uhle, 1924). Uhle's final report on the Chincha excavations was never published, but a field report written in 1901 is available (Uhle, 1924). Kroeber and Strong (1924: 3–8) gleaned further information on the sites and the excavations from Uhle's field catalog.

Following Uhle's pioneering work, no published archaeological field investigations were carried out in Chincha until the late 1950s. However, during the interim, several scholars worked with materials from Uhle's Chincha collection; Kroeber and Strong (1924:9–54) published their analysis of the artifacts (except textiles); O'Neale et al. (1949) published their study of Chincha burial textiles; Carter (1945) identified some cucurbit and gourd seeds; and Whitaker

(1948) described and illustrated gourd vessels. Also during this interval, Julio C. Tello visited the ruins of "La Centinela, Kumbe [sic], and San Luis" in the Chincha valley in October, 1915 (Guerrero, 1984: 2). Ten years later, in 1925, Tello returned to Chincha during his Second Archaeological Expedition to the South (Guerrero, 1984:3). The results of Tello's studies in Chincha have never been published.

Wallace (1971:*passim*) indicates that Lawrence E. Dawson had recorded some sites in the Chincha valley in 1955. In 1957 and 1958, Wallace carried out a surface survey of Chincha as part of the Peruvian Fulbright Program's archaeological project of the late 1950s (Menzel, 1971; Wallace, 1959, 1971). During the survey, Wallace recorded a total of 111 archaeological sites (cf. Sandweiss, 1989:68, note 58) ranging in date from the Early Horizon to the Initial Colonial Period (Wallace, 1971:4–80, 1972). Although most of the lower valley was covered, only a small part of the *meseta* of Chincha Alta on the north side of the valley was surveyed. In a mimeographed article (Wallace, 1972) accompanying his survey data (Wallace, 1971), Wallace elaborated on his earlier published version (Wallace, 1959) of the cultural sequence in Chincha; this work was the first synthesis of Chincha prehistory that dealt with the periods predating the Late Intermediate Period, although Uhle (1924:51–54) and Kroeber and Strong (1924:51–54) had identified a small number of sherds recovered around Site D (PV 57–10) (*see* Fig. 1) as pertaining to an earlier culture (Kroeber and Strong, 1924:Plate 1). Kroeber and Strong called this culture "Proto-Chincha."

Only two excavations were carried out in Chincha during the Fulbright project, both at Early Horizon sites. As Menzel (1971:97–98) explains, the main objective of the Fulbright project was to establish chronological sequences for the Peruvian coastal valleys, and Wallace had several reasons for concentrating on the early ceramic periods. Thus, Wallace dug a small test pit at site PV 57–63 to increase the collection of Early Horizon Pinta phase ceramics, and he dug a 2 × 3 m test pit together with Edward P. Lanning at the Early Horizon Pozuelo phase type site (PV 57–52) on the southern side of the valley (Lanning, 1960:412–423; Menzel, 1971: 101; Wallace, 1972) (*see* Fig. 1). In 1956, Lanning had excavated at the Early Horizon Jahuay site at the mouth of the Topará *quebrada,* to the north of Chincha, providing a background for the discoveries by Wallace (*see* Fig. 1).

During the next two decades, from 1959 to 1983, published research into Chincha prehistory again focused on the analysis of materials from earlier projects, and no new field work was carried out. In 1966, Menzel published her study of the late Chincha pottery from the Uhle collections. In the same volume of Ñawpa Pacha, she and Rowe drew on that work, Wallace's survey, Menzel's study of late Ica pottery (later published as Menzel, 1976), and historical sources to reconstruct the "role of Chincha in late pre-Spanish Peru" (Menzel and Rowe, 1966). In 1967, Menzel again utilized the Uhle Chincha collections in her article on late Ica figurines.

In 1971, Spanish translations of both Wallace's survey of Chincha and Menzel's 1960 summary of the Fulbright studies on the south coast appeared in Peru (Menzel, 1971; Wallace, 1971). Menzel's version of the cultural sequence is essentially the same as Wallace's account, as both are based primarily on Wallace's field study. Chincha also receives some mention in Menzel's analysis of late pre-Hispanic ceramics from the Ica valley (Menzel, 1976). During the 1970s, Garaventa (1979) restudied some of the Chincha burial textiles excavated by Uhle and originally examined by O'Neale et al. (1949). Recently, Wallace (1985, 1986, 1991) has published re-studies of his 1950s material, elaborating on the Early Horizon and early Early Intermediate Period of the south coast, including Chincha, and on the late pre-Hispanic Chincha road system.

Another important advance in the study of Chincha prehistory and protohistory in the last two decades has come from the publication and analysis of ethnohistoric documents relating to the valley in late pre-Hispanic times (*see* Chapter 2).

The ongoing Chincha–Pisco Archaeological–Historical Project began field work in the Chincha valley in 1983 under the joint direction of Craig Morris, Heather Lechtman, Luís Lumbreras, and María Rostworowski. This project has involved archival research, resurvey of the valley, and excavation and mapping at several sites, including the Inka and Chincha administrative center at La Centinela (PV 57–1) and the late pre-Hispanic farming site of Huacarones (PV 57–91) (*see* Fig. 1). My research on the late pre-Hispanic fishermen of Chincha has been done in association with the Chincha–Pisco Project. During the same period of time, a German expedition has been surveying, mapping, and doing limited excavation in the neighboring Quebrada de Topará, with a primary focus on late pre-Hispanic burial sites (Wurster, 1986). These new studies

Colonial Period		
		1532 A.D.
Late Horizon	post-Chincha assemblage/ Chincha style	1476
	Chincha style?	
Late Intermediate Period	Chulpaca C	
	Chulpaca B	1000
Middle Horizon	Nuevo Estilo (Huacarones)	
		500
	Estrella	
Early	Carmen	
Intermediate	Campana ----------	
Period	Chongos	0 A.D./B.C.
	Topará Tradition	
	Jahuay 3	
Early	San Pablo ----------	
		500
	Pinta ----------	
Horizon	Paracas Tradition	
	Pozuelo ----------	
Initial Period		1000 B.C.

Fig. 2.—Chronological sequence for the Chincha valley. Dates before the Late Horizon are approximate. Based on data from Lumbreras (1985), Menzel (1966, 1971, 1976), Menzel and Rowe (1966), and Wallace (1971, 1972, 1985, 1986).

should soon lead to a more detailed picture of Chincha culture history; based on the first several seasons of field work by the Chincha–Pisco Project (particularly the resurvey of the valley by Lumbreras), an updated synthesis of Chincha prehistory is already available (Lumbreras, 1985).

Culture History of the Chincha Valley

Fig. 2 summarizes current knowledge concerning the prehistoric sequence of the Chincha valley. The phases from Pozuelo through Estrella are those originally defined by Wallace (1959, 1972) based on his analysis of Chincha ceramics. Lumbreras (1985) has proposed Huacarones as the phase name for one of the "Nuevo Estilo" (New Style) Middle Horizon variants recently found by him in the valley. The earliest Spanish documents (e.g., Samano-Xerez, 1967 [1527–1528]; Cieza, 1984 [1550]:218–221, Cap. LXXIII) record the name "Chincha" in reference both to the valley and to its indigenous in-

habitants; since Uhle's time, the name has also been used to refer to the late pre-Hispanic culture of the area.

In terms of absolute chronology, the only radiocarbon dates from the Chincha valley are those reported in this study for the Late Horizon site of Lo Demás (*see* Chapters 5 and 11). All of the period attributions in the left hand column of Fig. 2 were derived from ceramic affiliations with neighboring valleys of the central and south coasts. The absolute dates are those commonly accepted for the major ceramic periods and horizons of Peru; no preceramic sites have been identified in Chincha.

Detailed descriptions of the ceramic styles that define the different phases are found in Menzel (1971) for the Early Horizon through middle Late Intermediate Period pottery and in Menzel (1966) for the later Late Intermediate Period and Late Horizon ceramics. Additional information on ceramics of all phases is available in Wallace (1972); his more recent articles provide more details for the Pinta (Paracas) (Wallace, 1985) and Topará pottery (Wallace, 1986). Further consideration of the late pre-Hispanic pottery of Chincha is found in Chapter 7 of this study. Sandweiss (1989) synthesized the available data on the culture history of Chincha from the earliest known occupation (Early Horizon) through the Middle Horizon. Following is a background summary of the late pre-Hispanic periods in Chincha.

The Late Pre-Hispanic Periods in the Chincha Valley

The majority of archaeological information available for Chincha concerns the late pre-Hispanic periods (Late Intermediate Period and Late Horizon), when the most intensive occupation of the valley took place. According to Menzel and Rowe (1966:70), late pre-Hispanic time in the Chincha valley is characterized by increasing autonomy of the indigenous Chincha culture. This process continued until the Inka conquest and domination (but not destruction) of Chincha in the later Late Horizon, during which time Chincha "maintained its prestige." More sites and more kinds of sites date to these late periods than to any earlier period, and the entire valley was occupied with the exception of the southern edge. The largest sites in the valley were built during the late pre-Hispanic periods, among them El Cumbe (PV 57–3), the San Pedro complex (PV 57–7), Huaca Tambo de Mora (PV 57–2), and the Chincha and Inka administrative center at La Centinela (PV 57–1) (Morris, 1988; Santillana, 1984; Wallace, 1971, 1972) (*see* Fig. 1). Wallace (1972:3) considers some of the large sites to be planned centers with special functions, but states that many are habitation sites composed of one or more high mounds built through "the accumulation of garbage and the rubble from earlier buildings." According to the number and size of the mounds, Wallace classifies these sites as small urban centers, large towns, small towns (villages), and rooms occupied by extended families which, if the walls are high and well made, might be considered as palaces or religious structures.

Wallace (1972:3–4) found that the large late sites of Chincha cultural affiliation were made of *tapia* (puddled mud and/or rammed earth), while Inka constructions in the valley had large, rectangular *adobes* (mud bricks) "with measurements in imitation of the rectangular stones [used by the Inka] in highland structures." Santillana (1984:28–29) lists three combinations of *adobes* and *tapia* found in Chincha culture and "bilateral" (Inka/Chincha) sectors at La Centinela, the Chincha and Inka administrative center: 1) *tapia* on *adobe*; 2) *adobe* on *tapia*; and 3) horizontally alternating *tapia–adobe–tapia*. The first type was found in a sector considered to have both Chincha and Inka occupations. The next two cases occur in predominantly Chincha sectors. Type 2 involves small, "lightly rectangular" *adobes* that seem to have been added slightly after the *tapia* construction by local people working to Inka specifications. The third type seems to occur only when *adobes* were used to fix gaps in earlier *tapia* walls. The purely Inka sectors of the site are built of rectangular *adobes*, as Wallace noted. At El Cumbe, Uhle (1924:67) observed a façade of "small boulders" covering the natural strata of the main mound; these cobbles are still visible in places. In the Late Horizon fishing site of Lo Demás, walls in Sector I (an area of common residences) were made of cobbles set in mud mortar (*see* Chapter 6). Sector I of Lo Demás lies about 100 m from the western edge of El Cumbe.

Another interesting feature identified by Wallace (1972:3, 1991) in apparent association with the late sites is a series of roads radiating out from La Centinela; some of these roads are "more notable in the aerial photographs of the valley than the Panamerican [highway]" (Wallace, 1972:3). The roads connect many of the largest late sites in the Chincha valley; one runs parallel to the shore from La Centinela to the San Pedro group. Because of the symmetry of the system—the roads running east and south from La Centinela form a right angle divided

evenly into thirds by two diagonal roads—Wallace (1972) initially argued that the plan must be ceremonial. However, it is worth recalling that the "Aviso" document (Rostworowski, 1970; *see* Chapter 2) describes the Chincha fishing settlement as "looking like a beautiful and long street." Furthermore, Rostworowski (1981:86) has found historic evidence from the Colonial Period concerning fishermen's roads in the central coast Lurin valley; there were five roads, of which the two closest to the sea were used by fishermen in their roles as messengers and as fishermen, respectively. Whether or not the Chincha roads had a purely ceremonial function remains to be demonstrated; however, Wallace himself (1991) has recently suggested multiple (including ceremonial) functions, based in part on the ethnohistoric data.

Using both ethnohistoric and archaeological data, Menzel and Rowe (1966) sketched the history of the Chincha valley during the Late Intermediate Period and Late Horizon. During the first half of the Late Intermediate Period, the inhabitants of Chincha were much influenced by their neighbors in the Ica valley to the south. The evidence for this influence is the presence of the Ica pottery style *Chulpaca B* and both imported and local versions of the later *Chulpaca C* pottery (Menzel, 1971:137). The two Chulpaca styles found in Chincha date to the first half of the Late Intermediate Period, and Menzel (1971) suggests that Ica influence on Chincha was strong during both phases despite a relative decline during Chulpaca C.

The assertion of local stylistic (and political?) autonomy first seen in the production of local variants of Chulpaca C pottery continued in the following phase, *Chincha-Soniche,* which Menzel (1971:137–138) considers as a local derivation out of Chulpaca C. Chincha-Soniche developed into the *Chincha* style proper[40] (Menzel, 1971) during Late Intermediate Period 8 and the early Late Horizon (prior to the Inka conquest of Chincha) (Menzel, 1966:65–66).[41] At this time, Menzel and Rowe (1966) find strong Chincha influence in the pottery of Ica and interpret it as evidence that the Chincha polity dominated the south coast region centered around the Paracas Peninsula. Chincha style pottery, meanwhile, "had closer relations with the north than with Ica . . . resembl[ing] very closely the corresponding pottery of Cañete and, less closely, that of the central coast. The resemblances extend to the valley of Chancay" (Menzel and Rowe, 1966:65; *see also* Menzel, 1966).

Most of the large, late sites in Chincha were built or at least in use during the Chincha phase. Although the presence of obvious Inka structures at La Centinela (*see below*) led Uhle (1924:72–75) to believe that the whole site was Inka (he thought that the main pyramid, a Chincha structure, was an Incaic Temple of the Sun), Wallace (1971:5) found Late Chincha ceramics and friezes as well as Inka potsherds at the site. Menzel and Rowe (1966:66) suggest that La Centinela formed a pre-Inka complex with the nearby Huaca de Tambo de Mora and El Cumbe, and that it was the capital of the Chincha polity. Recent work at La Centinela has confirmed the presence of both Chincha and Inka sectors at the site (Morris, 1988; Santillana, 1984). However, Santillana's (1984) study is based on architecture and surface collections. Considering the probability that Chincha style ceramics (and architecture?) continued in use throughout the Late Horizon, it is unclear whether or to what degree the Chincha and Inka sectors of La Centinela differ chronologically.

Uhle (1924:64–66) found both Late Chincha and Inka sherds around the Huaca de Tambo de Mora, and he argued that this site was the palace of the principal lord of Chincha. He also reasoned (by analogy to Pachacamac, the great coastal oracle–shrine in the Lurin valley near Lima) that El Cumbe was the temple of the Chincha creator god Chinchaycamac (Uhle, 1924:67–69). Uhle's argument concerns the relation of the main mound of the site with Cemetery B (PV 57–6)—this burial ground lies at the foot of the mound on its western side, as does the cemetery at Pachacamac. As Uhle points out, Chinchaycamac was considered to be a "daughter" or branch oracle of Pachacamac (*see* Chapter 2; *also* Patterson, 1985). However, Uhle also noted that the pottery from the Chincha cemetery dated only to the last pre-Inka period (as Kroeber and Strong [1924] and Menzel [1966] also found in their analyses of the ceramics from Cemetery B, but cf. note 41). Uhle concluded that El Cumbe and Cemetery B were a sacred precinct in use at the time of the Inka conquest of Chincha and that the Inkas destroyed this sanctuary.[42]

By the time the Inka conquered Chincha ca. 1476 (Menzel and Rowe, 1966:67), Chincha seems to have developed a highly centralized government that directly controlled both the Chincha valley and the northern half of the Pisco valley and strongly influenced the Ica valley. The Inka under Thupa Yupanki apparently conquered Chincha without a fight and made it into an administrative province separate from Pisco and Ica, an "arrangement [that] reduced

the local influence of Chincha" (Menzel and Rowe, 1966) (*see* Chapter 2). However, as argued in Chapter 2, the *long-distance* influence of Chincha may have grown under Inka rule as a result of increased long-distance trading.

According to Menzel (1966), the later Late Horizon in Chincha, after the Inka conquest of the valley, is marked by the *post-Chincha pottery assemblage* (but *see* note 41), which is equivalent to Kroeber and Strong's (1924) Late Chincha II and Inka pottery (Menzel, 1966:121; Menzel and Rowe, 1966:64). This assemblage includes some pottery derived from the Chincha style, a relatively large proportion of imported foreign pottery (mostly from the central coast), and Inka and Chincha–Inka pottery. The importance of the central coast ceramics in the post-Chincha assemblage is explained by the fact that "Chincha had a double allegiance during the period it was under Inca rule; it was not only subject to the Inca government but also to the oracle of Pachaeamac" (Menzel and Rowe, 1966:68). Because of an agreement made with Thupa Yupanki, the priests of Paehacamac were allowed to establish branch oracles in various places including Chincha (*see* note 42). This arrangement gave the priests political power in the valley during the period of Inka rule (Menzel and Rowe, 1966). Patterson (1985:164) suggests that the branch oracle in Chincha (Uhle's "daughter" of Pachacamac) was actually established shortly before the Inka conquest of the valley, and that one of its functions was to provide the Inka with information about Chincha. He also notes that "the caretakers of Pachacamac and the Incas were closely linked in those areas [such as Chincha] that were beyond the imperial frontiers when the branch oracles were established in them" (Patterson, 1985: 168). This observation accords well with the importance of central coast wares in Late Horizon Chincha and their association there with Inka pottery (Menzel, 1966:120–125).

The Inka established their administrative center for Chincha at La Centinela, a large part of which consists of *adobe* structures (a coastal trait) built according to the highland Inka architectural canon, including trapezoidal doorways and niches. Much of the Inka pottery from the Uhle collections came from Cemetery E (PV 57–11), the closest burial ground to La Centinela (Kroeber and Strong, 1924: Plate 1; Menzel, 1966:122). The Inka presence in Chincha is most obvious at these two sites, but there are a few other traces in the valley. Wallace (1972: 4) notes the presence of the rectangular *adobes* "always associated with Incaic features" in the large platform (A) at the San Pedro complex on the south side of the valley (Wallace, 1971:9). Wallace did not collect any Inka sherds at this site, but on one of the other San Pedro mounds, I found a fragment that C. Morris identified in the field as Ica–Inka. Inka pottery is known from some other sites, including Lo Demás (*see* Chapter 7).

The ethnohistoric evidence concerning the economic and social organization of late pre-Hispanic Chincha has already been discussed in Chapter 2. Of central importance are the indications that the population of Chincha was divided into residentially discrete and occupationally specialized groups, prineipally laborers (mostly farmers), fishermen, and merchants (Rostworowski, 1970). Long distance trade by land and sea was particularly important. Rostworowski (1970) believes that this pattern of occupational specialization and residential separation predates the Inka eonquest of Chincha, and that the Inkas allowed the Chincha to retain their economic organization despite the fact that this system differed significantly from the highland Inka system (Murra, 1972, 1980). Conquered groups were not always allowed such freedom, and Rostworowski (1970) feels that the Chincha were accorded this privilege because of the importance of the maritime trade to the Inka empire. Unfortunately for this interpretation, few specimens of the imported Ecuadorian *Spondylus* shell have been found in Chincha; Rostworowski (1970), Murra (1975), and others believe that *Spondylus* was the principal trade item acquired by the Chincha merchants. Uhle found no *Spondylus* shells in Chincha (Late Chincha I) graves, and from two to five of the shells in each of four graves of the post-Chincha assemblage (Late Chincha II and Inka) (Kroeber and Strong, 1924:30). In Chincha, *Spondylus* is not often found on the surface of looted sites nor in local antiquities collections, unlike the situation in the Moche valley on the north coast, where *Spondylus* is extremely common. Only a few fragments of this species occurred at Lo Demás (*see* Chapter 9). As suggested in Chapter 2, Chincha merchants may not have participated in extensive long-distance trade to the north until (and as a result of) their incorporation into the Inka empire.

The earliest Spanish presence in Chincha dates to 1534, only two years after the arrival of the Spaniards in Peru. By 1542, a Dominican monastery had been founded in the valley. Perhaps because of the early presence of the Europeans, the indigenous population of Chincha declined even more rapidly than

in other coastal valleys (Menzel and Rowe, 1966; Rostworowski, 1970). Cook (1981:160) calculates a ratio of population decline for Chincha of 100:1 for the first 85 years after the Spanish conquest. In historic times, the valley has often been prosperous but was never again a major maritime eenter, either in terms of fishing or trade, until the *anchoveta* boom in the 1960s. With the drastic decline in *anchoveta* capture following the 1972–1973 El Niño event, fishing is once more a minor part of the Chincha economy.

CHAPTER 5

LO DEMÁS: DESCRIPTION AND EXCAVATIONS

The Site of Lo Demás

The Discovery of Lo Demás

The archaeological criteria for the Chincha fishermen's settlement described in the "Aviso" document (Chapter 2) are 1) location near the shore in the Chincha valley, 2) late pre-Hispanic date, and 3) evidence of fishing. Any site meeting these criteria would have to be considered as part of the specialized fishing settlement; the ethnohistoric models of Chincha economic organization presented in Chapter 2 can be evaluated by analysis of such a site in terms of the expectations listed in Chapter 3.

The "Aviso" document (Rostworowski, 1970: 170–171) describes the fishing settlement as looking like a road ("parecía una calle hermosa y larga") running along the shore ("por la costa de la mar"). This "road" began two leagues (one league is approximately five km, *see* Hyslop, 1984:295–296) before arriving in Chincha (probably the site of La Centinela; *see* Fig. 1), had a total length of five leagues, and reaehed a place called Lurinchincha. During June and July of 1983, I visited sites along the Chincha coast beginning on the southern side around the former Hacienda Lurinchincha (Fig. 1). Although late pre-Hispanic mound groups are preserved there (Chapter 4), intensive agriculture has removed obvious traces of small-scale residential sites throughout the entire valley floor; I was unable to locate any sites that might have been common fishermen's dwellings in that zone. On the north side of the valley, however, on the seaward side of the Chincha Alta *meseta* (*see* Chapter 4), Peruvian archaeologist Idilio Santillana found a number of net fragments on the surface of an area where a deep quebrada precludes irrigation and concomitant agriculture. This site parallels the shoreline, and its long, narrow form resembles a road.

On inspection, I found archaeological deposits exposed in the quebrada profile of the southern sector of the site. The strata contained abundant remains of fish and plants, along with late pre-Hispanic potsherds, net fragments, textiles, and other artifacts. Cobble and mud mortar walls, clay and earth floors, and hearths were visible. Other sectors had evidence of burials and of large scale structures. Clearly, this site met the criteria for a suitable place to test the ethnohistoric data on the Chincha fishermen (and, for reasons of preservation, it appeared to be the only large section of late pre-Hispanic fishing settlement available for study in the valley). The site lacked a local designation, so I named it "Lo Demás" from the "Aviso" document's description of the fishermen's daily lives (*see* Chapter 2).

Modern Site Environment and Description

The site of Lo Demás is located on the northern side of the Chincha valley, about 250 m west of El Cumbe (PV 57–3) and 725 m west northwest of the Chincha and Inka capital at La Centinela (PV 57–1) (Figs. 1, 3). The present-day fishing village of Tambo de Mora lies 1.2 km to the southwest of Lo Demás, while Chincha Alta, the provincial capital, is 5 km to the east and north. The site is situated at an average height of about 40 m above sea level, on top of the southwestern edge of the Chincha Alta *meseta.*

Lo Demás today is an unoccupied, unvegetated strip of sandy desert. This condition has apparently characterized the site since the Spanish conquest or shortly thereafter, given the lack of substantial Hispanic-era deposits and the excellent preservation of the late pre-Hispanie organic remains. Had the site been irrigated at any time following the final pre-Hispanic occupation, the organic remains would not be so well preserved. Lo Demás lies on a major path connecting settlements on the Chincha Alta *meseta* with the lowlands of the lower valley around Tambo de Mora and Chincha Baja, and the only recent deposits at the site are superficial traces left by the people, sheep, goats, horses, and burros who frequent the path.

Fig. 3.—Aerial photograph of Lo Demás and immediate vicinity. North is at the top of the photograph. The intact portion of the site is outlined in black; note the monumental structures just north of the intact zone. The pockmarked zone to the right (east) of Lo Demás is the heavily looted Cemetery B (PV 57–6); the rectangular structure to the right of Cemetery B is El Cumbe (PV 57–3).

Lo Demás runs parallel to the shoreline and overlooks the sea some 900 m to the west. A sheer bluff borders the site on its western, seaward side and at its southern terminus; a modern irrigation canal runs along the side of the bluff below the site (Fig. 4). At the base are agricultural fields, planted mostly in cotton to the west and maize and garden crops to the south. A modern road runs along the western edge of the cotton fields, separating them from a strip of sandy beach.

To the north of Lo Demás, the surface of the bluff dips slightly before continuing northward. Many

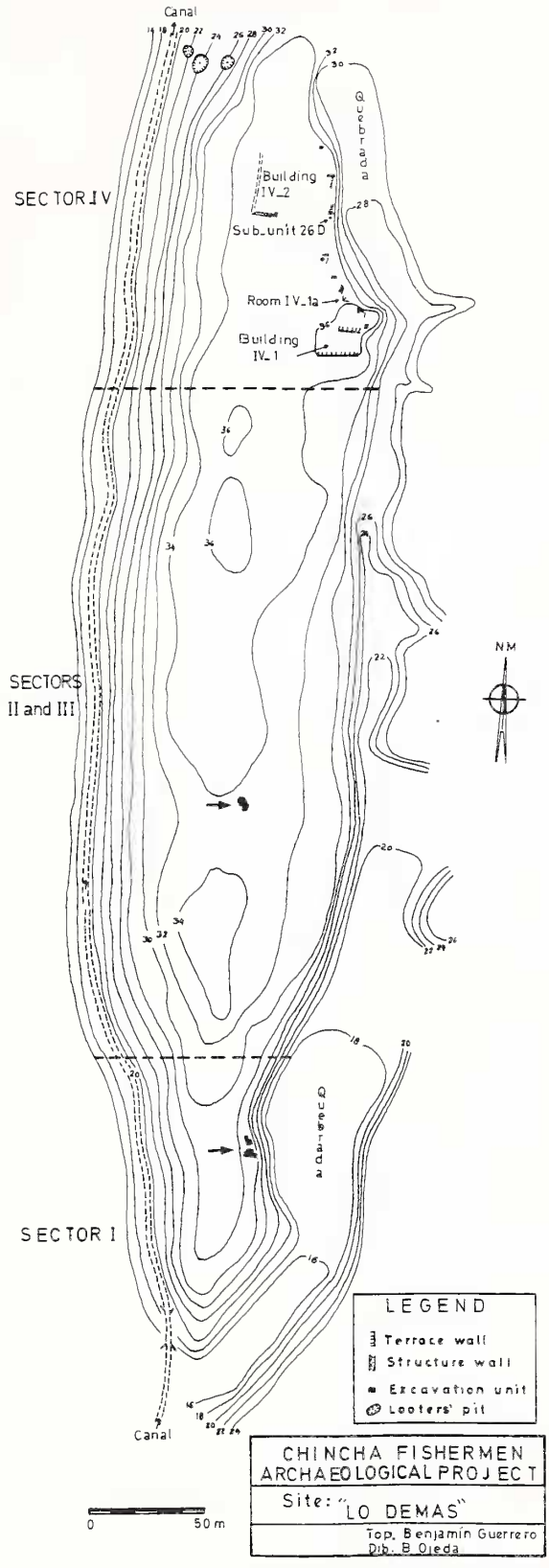


Fig. 4.—Lo Demás site map, showing division into sectors and location of excavations. Arrows point to excavation areas.

quebradas cut through the bluff, most notably the Quebrada de Topará near the Jahuay beach, some 15 km from Lo Demás. Just north of Topará, the bluff rises and the adjacent beach disappears.

A quebrada runs along the eastern side of Lo Demás, separating the site from a late pre-Hispanic cemetery (PV 57–6, Uhle's Cemetery B [Kroeber and Strong, 1924]) at the foot of El Cumbe. The latter site is a large, artificial mound thought to date to the late pre-Hispanic periods (Fig. 3) (*see* Chapter 4).

Although irrigation runoff flowing through the quebrada continues to erode the eastern margin of the site, the geographic impediments noted in the preceding paragraphs isolate the surface of Lo Demás from running water. Consequently, Lo Demás has been spared from the intensive irrigation agriculture that has destroyed most of the pre-Hispanic residential sites in the lower Chincha valley. This fact and the extreme aridity of the Peruvian coast account for the excellent preservation of organic and other remains.

Archaeological strata are exposed along much of the eastern profile of Lo Demás, where the site has been sliced open by the quebrada. However, the surface of Lo Demás is remarkably clean, considering the extensive archaeological deposits that underlie the entire site: few remains are found exposed on the surface of the site, except around recently looted burials. This condition is due largely to salitrification (precipitation of salts from the atmosphere) and to the strong winds which blow over the site from the southwest, particularly in the *paracas* season during September and October (Cánepa P., 1982:16). In late August, 1983, these winds were strong enough to fill the excavation pits with four cm of sand during a single night. Salitrification weakens the artifacts and organic remains, and the windblown sand either buries or destroys them. Fairly thick sand deposits have accumulated in some parts of the site, but there are also windscoured areas of Lo Demás where in situ archaeological deposits begin less than a centimeter below the surface. The difference depends on the nature of the original structures; sand accumulates in and around unfilled rooms, but blows across rooms filled with primary midden or construction material.

Site Environment During the Late Pre-Hispanic Occupation

At the time Lo Demás was occupied, the site and its surrounding environment were somewhat different than at present. As recently as 1901, sketch maps

by Uhle (1924:Plates 1 and 24) indicate that the area to the west and south of the site was marsh. This information is consistent with the presence of marsh species among the plant remains recovered from Lo Demás (*see* Chapter 10). To the north of the present site limit, 1942 aerial photographs reveal that the two extant buildings in the northern sector of Lo Demás (Sector IV, *see below*) formed only part of a more extensive area of monumental architecture containing at least two other large structures (Fig. 3). Today, none of these other buildings remain, and the area north of the site is now a vineyard. According to local informants, the structures were bulldozed in the early 1970s. The remaining buildings, a stepped mound and a rectangular enclosure, have been severely eroded along their eastern margin by the quebrada; runoff from the vineyard has probably increased the rate of erosion over the last decade. A meter-wide slice of Building IV–2 disintegrated into the quebrada between August 1985 and September 1986.

At the time Lo Demás was occupied, the quebrada to the east ran along part of its present course opposite the southern half of the site, separating it from Cemetery B. The midden deposits in the southeastern corner of Lo Demás overlie the former quebrada edge, as do midden strata associated with the southwestern sector of Cemetery B. Deposition by the late pre-Hispanic inhabitants of Lo Demás gradually filled in part of the quebrada (*see* Chapter 6).

Opposite the middle of the site, a series of small quebradas enter the main, east–west channel. At some time in the past, these lateral gullies were filled by flood deposits and are now being exhumed by irrigation runoff (Sandweiss, 1989:107). The flood which filled the quebradas was probably part of a post-Columbian El Niño event, in which case the lateral quebradas existed during the late pre-Hispanic occupation of Lo Demás (Sandweiss, 1989: Appendix A).

Across the quebrada, the lands bordering Lo Demás on the east were occupied by Cemetery B and El Cumbe. From her analysis of the grave wares excavated by Uhle, Menzel (1966:80) places Cemetery B within her Chincha style, prior to the arrival of the Inka in Chincha. However, this style apparently remained in use during the Late Horizon (*see* Chapters 7, 8, and 11). Use of Cemetery B as a burial ground thus may predate the occupation of Lo Demás, but by a few years at most; even if no longer in active use, the cemetery probably retained its status as a place of the dead throughout the late pre-Hispanic period. In any case, the cemetery could not have been used for agricultural purposes prior to 1901, given the good preservation of textiles (O'Neale et al., 1949; Garaventa, 1979) and other organic materials (Kroeber and Strong, 1924) in the graves excavated there by Uhle.

The shoreline at the time Lo Demás was occupied lay somewhat closer to the site than at present. Alan Craig (personal communication, 1983) sees evidence for a 1 m uplift of the Chincha coast in post-Columbian times; such an uplift would have resulted in a westward displacement of the beach. Emerged Holocene beaches are known from many points along the Peruvian coast (*see* Pozorski and Pozorski, 1979*a*:337–341; Sandweiss et al., 1983; cf. section by Hsu in Sandweiss et al., 1990); one of the best examples is the fossil lagoon at Otuma, only 50 km south of Lo Demás on the Paracas Peninsula (Craig and Psuty, 1971). Pachas T. (1983:106) mentions nine major earthquakes felt in Chincha between 1664 and 1974, and her list may not be exhaustive. However, even without recent tectonic uplift, net progradation of the coast through sedimentary processes has occurred. Pachas T. (1983: 40) mentions the "arenamiento" (sedimentation) of the old dock that was built towards the end of the last century; this dock eventually had to be abandoned because of the sand deposition. Cánepa L. (1982:88) is somewhat more explicit. He states that sedimentation of the Tambo de Mora dock began towards the end of the last century with a change in the river mouth and continued until the dock was left dry. Coker, who surveyed the Peruvian fishing industry from Paracas to Paita in 1907, has the definitive version: ". . . and even when there is a 200 m long steel dock, this is entirely dry as a consequence of the materials which the river brought down in 1904" (Coker, 1908–VI:89). The present dock, which is made of cement, also suffers from sedimentation; this dock may be the second built since Coker's visit.

The organic remains excavated at Lo Demás indicate a climate and suite of habitats similar to those found in the area today, although the distribution of habitats appears to have changed through time. With one exception, all of the mollusks found in the site are indigenous to the cold waters of the Peruvian coast; the few fragments of warm water *Spondylus* shell were almost certainly imported from Ecuador. Although it is a cool water, Peruvian bivalve, the purple mussel *Choromytilus chorus* may have been imported from south of Chincha (perhaps as close as the Paracas peninsula). The frequency of rocky

shore mollusks varied throughout the archaeological sequence at Lo Demás, suggesting changes in the littoral habitats near the site during its occupation (*see* Chapter 9).

The fish species identified from the remains are all found in the Pisco–Chincha area today, as are the identified birds. The few terrestrial animals and the sea mammals are also indigenous to central Peru. However, the marine mammals were probably not available locally, but instead must have been hunted or obtained from the rocky headlands found to the south at Paracas, to the north in Cañete, or on the Chincha or Ballestas islands (*see* Fig. 1 and Chapter 9).

The crustaceans from the site, mainly the violet crab *Platyxanthus orbignyi,* are common on the Chincha shoreline today. Isotopic analysis of chitin from the carapaces of the Lo Demás *Platyxanthus* suggests a normal marine environment similar to the modern one (Schimmelmann, personal communication, 1984; Schimmelmann et al., 1986:562) (*see* Chapter 9).

Nearly all of the plant species identified from Lo Demás still grow in the vicinity of the site, although as mentioned above, there is some evidence that the distribution of fields and marshes has changed since the abandonment of the site.

Archaeological Sectors of Lo Demás

Lo Demás was initially divided into four sectors from south to north, based on the nature of the archaeological remains visible on the surface and in the eastern quebrada profile (Fig. 4). Sector I covers the southern 100 m of the site and consists of primary midden, floors, cobble and mud mortar walls, and fallen *quincha* (cane and mud) walls. The simple structures and relatively impoverished domestic midden indicate that this sector was an area of common fishermen's residences dating to the Late Horizon. Despite a few small looters' pits, the surface of Sector I shows a near-total lack of archaeological materials. Midden, floors, and walls are visible to the east in a section of quebrada-cut profile (*see* Fig. 11). In Sector I, the archaeological deposits begin within a centimeter of the modern surface.

Sector II–III covers the middle portion of the site and, despite initial separation based on preliminary inspection, is now considered as a single unit. This sector is characterized by late pre-Hispanic and possibly Initial Colonial burials intruded into cobble and *tapia* structures of late Early Horizon date (ca. 400–200 B.C., Paracas 9 affiliation: S. Massey, personal communication, 1986). The Paracas 9 structures are not visible on the surface. However, a rise on the west side of Lo Demás, just north of the border between Sectors I and II (Fig. 4), is an artificial mound with several courses of cobbles eroding out of the side. This buried mound is probably part of the late Paracas settlement.

The surface of Sector II–III is covered with visible looters' pits, while excavation revealed that other such pits had been completely filled with windblown sand. Some of the sand-filled pits were still visible in 1942 (*see* Fig. 3). Scatters of human bones, potsherds, canes, textiles, and occasionally other artifacts are found around the more recently looted burials. Debris from earlier looting has been covered by sand or destroyed by salt.

Sector IV is a zone of monumental structures and associated midden dating to the late pre-Hispanic periods and probably contemporary with Sector I. A small mound (Building IV–1) and part of a large rectangular enclosure (Building IV–2) are still preserved in this sector. The eastern two-thirds of Building IV–2 has been eroded by the quebrada during the last 40 years, leaving a long, exposed profile in which the sequence of construction of this unit is clearly visible (*see* Fig. 19). As mentioned earlier, the 1942 aerial photograph (Fig. 3) shows the zone of monumental structures continuing north for at least 250 m beyond the present limit of the site. Now completely obliterated, this extension of Sector IV included an immense platform and two large, multi-room structures, one of which appears to have been an artificial mound several times larger than Building IV–1.

Excavations at Lo Demás: Design and History

The original plan for the excavation of Lo Demás involved digging a sample of high density/high priority areas, followed by a series of randomly located test pits to determine how well the results of the judgmental sample applied to the entire site. The high priority areas were chosen on the basis of the long, continuous profiles of Sectors I and IV strata exposed along the eastern quebrada. Due to time constraints, the complexity of the microstratigraphy, and the importance given to recording each of these microstrata, I was only able to dig the judgmental sample, beginning with a test trench in 1983 and continuing with more extensive excavations in 1984. The random testing program must be carried out during a future field season. Nevertheless, sev-

eral factors mitigate the problem of small sample size and allow useful conclusions to be drawn from the available data (*see* discussion of limitations in Chapter 11).

Excavations in Sector I

Archaeological investigation of Lo Demás began in August and September of 1983 with the excavation of a small test trench in Sector I of Lo Demás. The objective at this point was to confirm the indications that components of the site dated to the appropriate late pre-Hispanic time frame and that the inhabitants were fishermen, whatever other general and/or specialized activities they may have practiced. The excavation provided confirmation on both points (Sandweiss, 1983, 1988), leading to the decision to continue work at Lo Demás the following year.

The 1983 test trench was 4 m^2 and L-shaped; its long side was parallel and close to the edge of the quebrada on the east side of the site (Fig. 5). The quebrada profile along this side of Sector I showed midden throughout, deepening opposite the test trench to a maximum depth of over 2 m just east of the 1984 excavations. The location of the 1983 trench was determined by the deposits exposed in the quebrada: floors, cobble and mud mortar walls, and midden including net fragments and fish remains. Given the time constraints of the 1983 season, the deepest section of deposits exposed in the quebrada was left for the following year.

The basic horizontal divisions of the excavations were 1 m^2 subunits, organized in the 1984 excavation into 2 m^2 units (*see* Fig. 5 for subunit designations). Within each subunit, excavation proceeded by natural levels and features (*see* Sandweiss, 1989:116–118, footnote 93 for details of level and feature designations). Each level, sublevel, feature, or subfeature in each subunit was considered a separate provenience and assigned a catalog number.

Of the four subunits in the 1983 test trench, two were excavated to sterile ground, which was encountered at a maximum depth of 0.75 m below the surface. Parts of three subunits (A1, A3, B3) were left unexcavated or partially excavated (*see* Table 1). All excavated materials were screened with 0.25-in mesh, and in some cases the material that passed through the screen was saved for future analysis.

In 1984, excavations in Sector I were located from 0.75 and 2.00 m south of the 1983 test trench, above the deepest deposits revealed in the quebrada profile. Eighteen subunits pertaining to five units were

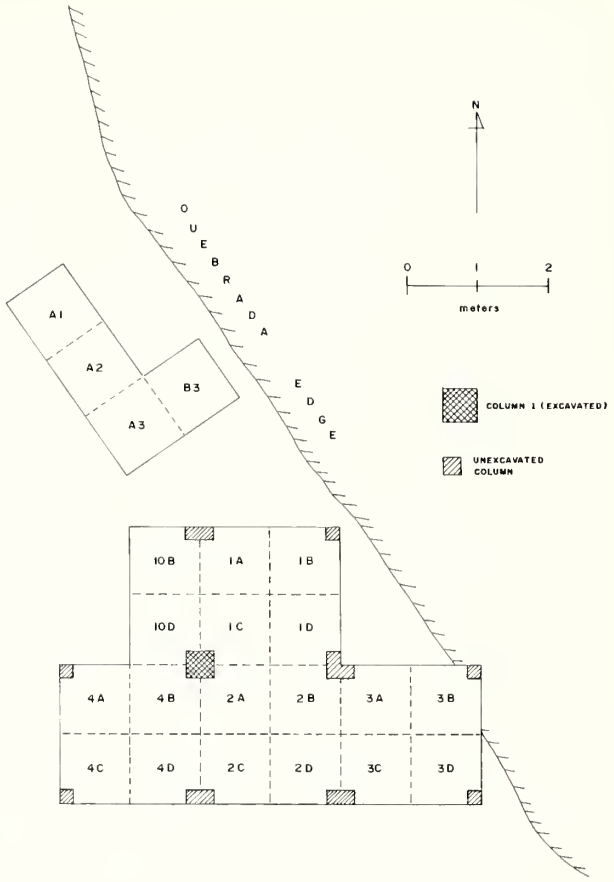


Fig. 5.—Configuration of the 1983 and 1984 excavations in Sector I of Lo Demás. See Fig. 4 for location of the excavations within the site as a whole.

opened (Fig. 5); 14 were wholly or partially excavated to sterile ground (*see* Table 1), which was encountered at a maximum depth of 1.30 m below the surface. A 0.20 m^2 column was left standing in the four corners of each 2 m^2 unit (Fig. 5). At the end of the season, a 0.40 m^2 column (combining the adjacent columns of subunits 2A, 4B, 10D, and 1C) was removed by natural levels without screening.[43] In addition, an unscreened sample from which the artifacts had been removed was kept from each provenience (subunit/level or subunit/feature). These samples measured about 400 cm^3. In the case of very small proveniences (under ca. 800 cm^3), the artifacts were removed and the entire unit was saved without screening. The rest of the excavated material was passed through 0.25-in screen.

Excavations in Sector II–III

Excavations were opened in Sector II in 1984 to find burials associated with the fishing settlement at

Lo Demás. The area selected (*see* Fig. 4) appeared to be the least affected by looting. The results of the excavation were surprising. First, despite the level appearance of the surface, the area is peppered with looters' holes. Second, walls and floors of a different construction from those in Sector I underlie the entire area. As discovered later, these features are part of structures that date to late in the Early Horizon (Paracas 9), over 1,500 years prior to the late pre-Hispanic fishing occupation at Lo Demás. Finally, although there were late pre-Hispanic (and/or Initial Colonial) burials present in the area, the lack of contemporary, late pre-Hispanic residential deposits and the scarcity of diagnostic grave goods made it impossible to relate these burials directly to the fishing occupation of the site.

Because of these dating and correlating difficulties, excavations in Sector II–III will be discussed peripherally.

Excavations in Sector IV

In Sector IV, two excavations were carried out: Room IV–1a in Building IV–1 was cleared and Subunit 26D was exeavated adjacent to Building IV–2 (Figs. 4, 6). Room IV–1a was cleared after the discovery of mural paintings on the two surviving walls of the chamber (*see* Chapter 6). Erosion of Building IV–1 by the quebrada had removed the north and east walls of the room, and the material with which it had been filled during a later construction phase was slowly disappearing into the quebrada while revealing the paintings. After excavation of the remaining fill to the surface of the floor associated with the room, Peruvian National Institute of Culture conservator E. Guzmán stabilized the murals in accordance with Institute practice.

Immediately adjacent to the south side of Building IV–2, the quebrada profile showed the majority of the strata dipping south, apparently having been thrown or fallen from this building during its use (Fig. 7). I placed Subunit 26D in this area, 1.9 m south of Building IV–2 and 0.30 m west of the quebrada edge, on the assumption that the deposits there would reflect the activities carried out in Building IV–2.

The excavation of Subunit 26D followed the same methodology as described for the 1984 excavations

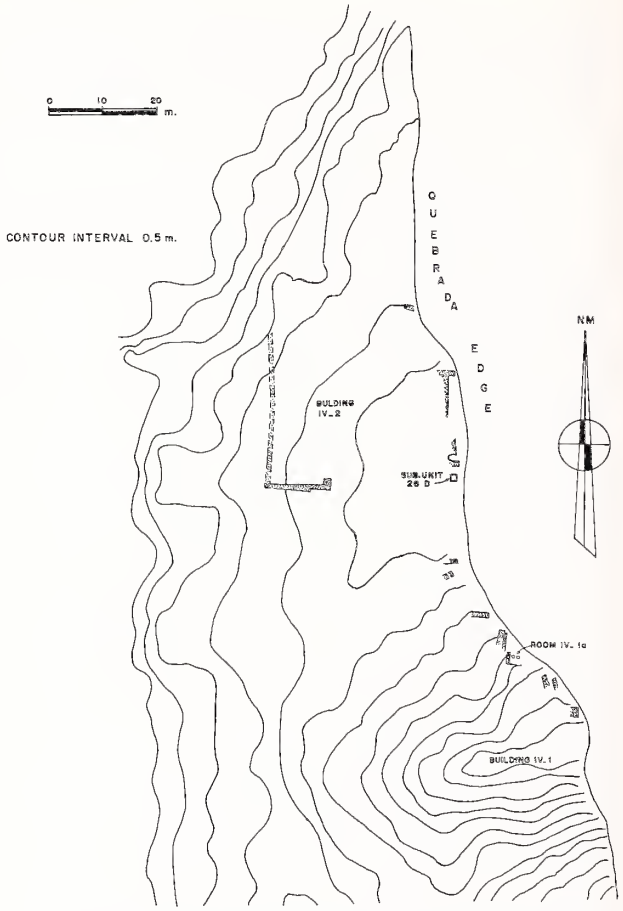


Fig. 6.—Detail of Sector IV of Lo Demás, showing the location of Subunit 26D and Room 1a. Fig. 4 shows the position of Sector IV within the site as a whole.

Table 1.—*Depth of excavation in subunits from Sector I, Lo Demás.*

Year	Subunit	Excavated to
1983	A1	Top of Complex A
	A2	Sterile
	A3	Top of Complex A
	B3	Sterile
1984	1A	Sterile
	1B	Within Complex C
	1C	Sterile
	1D	Within Complex C
	2A	Sterile
	2B	Sterile
	2C	Sterile
	2D	Sterile
	3A	Sterile
	3B	Sterile
	3C	Sterile
	3D	Sterile
	4A	Top of Complex C
	4B	Sterile
	4C	Top of Complex C
	4D	Sterile
	10A	Not excavated
	10B	Sterile
	10C	Not excavated
	10D	Sterile

Fig. 7.—Quebrada profile adjacent to Subunit 26D. Subunit 26D is located just behind and to the left of the vertical cord (below arrow) in the center of the photograph. View is west to east.

in Sector I. A 0.20 m^2 column was left intact in the southeast corner of the subunit and was later removed without screening (*see* note 43). Excavation stopped at a floor that forms part of the major construction phase of Building IV–2 defined in the quebrada profile, at a maximum depth of 1.35 m below the surface.

Excavations at Lo Demás: Stratigraphy

Sector I

Although 1,306 proveniences were excavated in Sector I, all of the levels and features could be grouped during analysis into four stratigraphic complexes (*see* Figs. 8, 9 and Sandweiss, 1989:Appendix

B). Each complex is designated by a letter and a descriptive label, from the lowest (A) to the highest (D). The stratigraphic complexes cover both the 1983 and the 1984 excavations (Table 2).

A. Basal Complex.—This complex underlies the Sector I deposits and conformably covers the original topography, which is composed of the easily recognized, alternating sand and clay layers of the Topará Formation. Of variable thickness (2 to 30 cm), Complex A has almost no archaeological material; the few remains are probably intrusive from the overlying levels. At the very least, the material is scarce enough to suggest that this complex represents an ephemeral human presence at the site, not local habitation. No radiocarbon dates are available for this complex.

B. Lower Complex.—The Lower Complex consists of east- and northeast-dipping strata of primary, generally high density midden, and it provides the first clear evidence of human habitation in Sector I. The eastward slope of this complex conforms to the original topography, which drops sharply to the east into the quebrada. The lack of walls, hearths, or constructed or use-trampled floors in the Lower Complex, together with the eastward slope, imply that the complex was deposited from a habitation focus to the west of the excavation area. This complex was not present in the 1983 test trench, probably because the midden was being thrown into what appears to have been a channel or gully in the side of the quebrada underlying the 1984 excavation area. The base of the Unit 3 north profile (Fig. 9) shows the former quebrada edge as revealed under the excavations in Sector I. Deliberately or not, the first inhabitants of this sector practiced a kind of land fill. Marcus (1987*a*:398) reports a somewhat similar pattern of gully filling and terrace construction at Cerro Azul, a Late Intermediate Period fishing site in the neighboring Cañete valley.

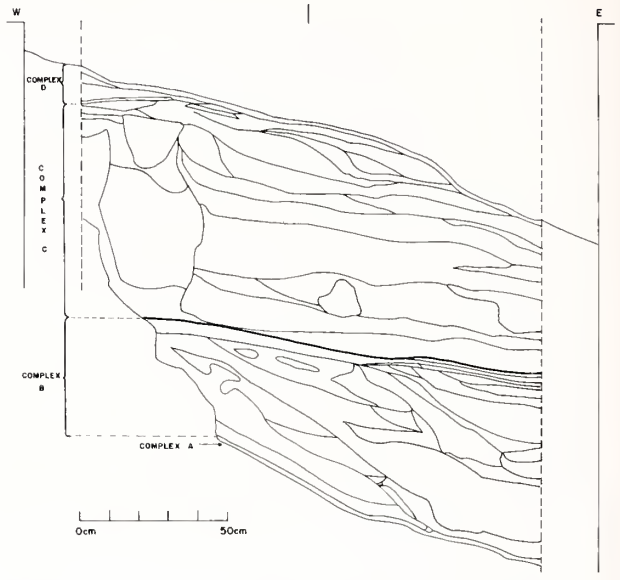


Fig. 9.—North profile of Subunits 3A and 3B from the 1984 excavations in Sector I of Lo Demás, showing Stratigraphic Complexes A, B, C, and D.

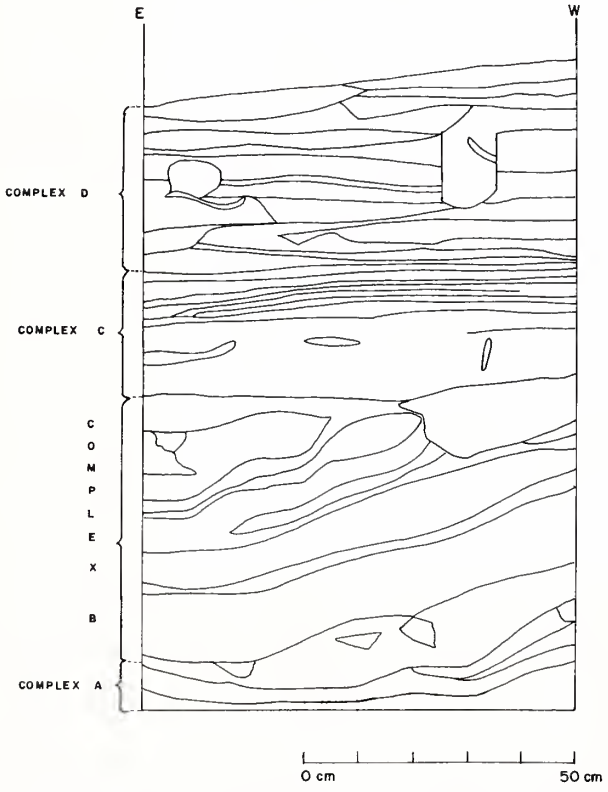


Fig. 8.—South profile of Subunit 2C from the 1984 excavations in Sector I of Lo Demás, showing Stratigraphic Complexes A, B, C, and D.

Four radiocarbon dates are available for the Lower Complex (Table 3, Fig. 60). One date (260 ± 100: A.D. 1690 [BGS 1195]) is inconsistent with the other three Lo Demás dates, and is discounted as anomalous.[44] The other dates have an average uncorrected mean of 433: A.D. 1527, or an average calibrated (Stuiver and Pearson, 1986) mean of A.D. 1460.

C. Middle Complex.—This complex represents the earliest habitation of the *excavation area* in Sector I, though the earliest occupation of the *sector* was during the Lower Complex. At the beginning of the

Table 2.—*Correspondence of the stratigraphic complexes defined for Sector I with the levels reported in Sandweiss (1988) from the 1983 test trench.*

	Stratigraphic Complex	Original Level Designation in 1983 Test Trench (Sandweiss, 1988)
Top	Mixed surface deposits	Level 1
	D. Upper Complex	Level 2
	C. Middle Complex	Level 3
	B. Lower Complex	Not present
	A. Basal Complex	Level 4
Bottom	Sterile	Sterile

Table 3.—*Radiocarbon dates from Lo Demás. Abbreviations: SC, stratigraphic complex (applicable only to Sector I proveniences); Cat., catalogue number (Sandweiss, 1989:Appendix B). The "Date" column shows the uncorrected dates. The "Calibrated" column is based on the graphs published by Stuiver and Pearson (1986), using the 30-year southern hemisphere reduction (Stuiver and Pearson, 1986:809). In this column, the range of dates represents one standard deviation around the mean (not always symmetrical). In some cases, the graphs yield multiple dates (all spans are reported, but only the most likely mean).*

Sample	Sub-unit	Cat.	SC	Date	Calibrated
BGS 1191	1C	478	D	350 ± 80 A.D. 1600	A.D. 1460–1654 A.D. 1523
BGS 1192	10B	789	C	400 ± 130 A.D. 1550	A.D. 1420–1650 A.D. 1480
BGS 1195	3B	1535	B	260 ± 100 A.D. 1690	A.D. 1400–1680 A.D. 1660
BGS 1197	4B	1856	B	400 ± 100 A.D. 1550	A.D. 1380–1580 or 1430–1650 A.D. 1480
BGS 1198	4D	1857	B	450 ± 80 A.D. 1500	A.D. 1422–1514 or 1599–1616 A.D. 1448
BGS 1194	1C	1201	B	450 ± 80 A.D. 1500	A.D. 1422–1514 or 1599–1616 A.D. 1448
BGS 1196	26D	1718	—	475 ± 140 A.D. 1475	A.D. 1300–1585 or 1390–1640 A.D. 1440
BGS 1199	26D	1874	—	380 ± 90 A.D. 1570	A.D. 1415–1595 or 1445–1650 A.D. 1500

deposition of the Middle Complex, the inhabitants of Lo Demás levelled the Lower Complex deposits and began to live in the excavation area. The process of levelling the older, east-dipping strata is clearest in Unit 3, where the Middle Complex begins with a clay floor constructed over truncated Lower Complex strata and associated with a clay wall (*see* Fig. 9 and Chapter 6).

The Middle Complex consists of horizontal floors (both constructed and use-trampled) and midden levels, punctuated by pits, postholes, channels, and hearths (*see* Chapter 6). Its stratigraphically highest level is a clay floor that was present in all of the excavated subunits, and which underlay the cobble and mortar walls of the next complex (D). The Middle Complex was found superimposed directly on the Basal Complex in the 1983 test trench (*see* Table 2).

The single radiocarbon date for the Middle Complex is 400 ± 130: A.D. 1550 (uncorrected, BGS 1192), or A.D. 1480 (calibrated, Stuiver and Pearson, 1986) (*see* Table 3 and Fig. 60).

D. Upper Complex.—The Upper Complex is the final occupation level in Sector I of Lo Demás; it began with the construction of cobble and mud mortar walls and an associated clay floor. Above this floor, which was poorly defined in some subunits, this complex is composed of use-trampled floors and midden deposits broken by pits, postholes, hearths, and channels (*see* Chapter 6). The accumulation of the Upper Complex is thus similar to that of the Middle Complex, with two exceptions. First, unlike the wall in Unit 3 in the Middle Complex, the cobble walls apparently represent a building phase that extended over much of Sector I (*see* Chapter 6). Second, the upper part of the Upper Complex in Unit 4 contains evidence of a curved *quincha* structure possibly related to cane-filled channels in Units 1 and 2 (*see* Chapter 6). The intervention of the cobble and mud mortar wall prevents exact correlation between the levels in the eastern and western half of the Upper Complex.

The one radiocarbon date for the Upper Complex, the youngest from Sector I (except for the anomalous Complex B date) is 350 ± 80: A.D. 1600 (BGS 1191, uncorrected), or A.D. 1523 (calibrated; *see* Table 3 and Fig. 60).

Above the Upper Complex, a thin layer of loose surface debris averaging about 1 cm in thickness covered the archaeological levels and contained abundant feces of sheep and goats, along with other occasional items of post-Hispanic origin. This layer is not included in the stratigraphic complexes.

Sector IV

Two excavations were carried out in this sector, in Room IV–1a and in Subunit 26D. The stratigraphy of Room IV–1a has little significance; although four levels were distinguished, all consisted

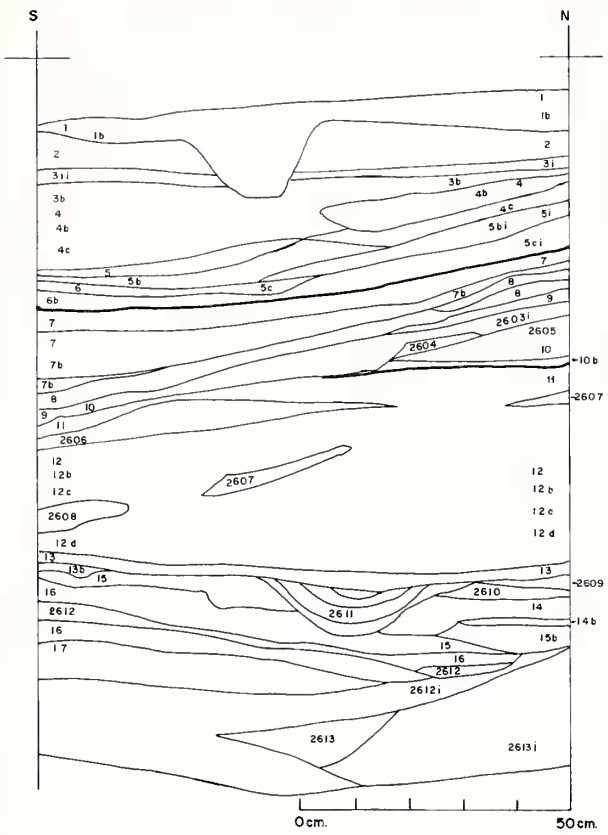


Fig. 10.—West profile of Subunit 26D in Sector IV of Lo Demás, showing features (four-digit numbers beginning with "26") and levels.

of fairly homogeneous fill that was probably deposited during a single building phase in Building IV–1, subsequent to the construction and use of Room IV–1a (*see* Chapter 6). Unlike the rest of the excavations at Lo Demás, I excavated Room IV–1a (of which less than 3 m^2 of floor area were preserved) as a single unit, not subdivided into 1 × 1 m subunits.

Due to the small size of Subunit 26D, major stratigraphic groupings could not be distinguished. From the adjacent quebrada profile, however, it is clear that the base of the excavation rests on a constructed floor related to the major building phase of Building IV–2 (*see* Chapter 6). As mentioned earlier, the strata in Subunit 26D tend to dip to the south, away from Building IV–2 (Fig. 10). The levels consist of floors, midden deposits, and wall fall. Compared with the Sector I subunits, Subunit 26D has fewer features such as pits or postholes.

The two radiocarbon dates available for Subunit 26D (*see* Table 3 and Fig. 60) do not fit stratigraphic order, suggesting that the upper levels of this subunit may be mixed with earlier material (*see* Chapter 9, section on shells). The older date, from level 26–3b, is 475 ± 140: A.D. 1475 (uncorrected, BGS 1196). The younger date, from level 26–17, is 380 ± 90: A.D. 1570 (uncorrected, BGS 1199). The calibrated mean dates for these two assays are A.D. 1440 and A.D. 1500, respectively. The range of these dates is consistent with the Sector I dates, indicating contemporaneity between the two sectors.

Conclusions

Excavations in Sector I of Lo Demás defined four stratigraphic complexes, A to D, each representing a different depositional activity in the excavated area. These complexes form the basic units for the analyses of the Sector I materials. In Sector IV, the deposits from Subunit 26D pertain to one phase in the construction sequence of Building IV–2 and therefore are treated as a single analytic unit.

Deposits of clean, windblown sand were almost completely lacking within or between the Sector I complexes or between the Subunit 26D levels; the few small occurrences had no lateral extension. Given our experience with the effect of seasonal "paracas" winds and the presence of standing architecture during most of the occupation, this fact suggests that the habitation of the site was continuous from the beginning of the Lower Complex to the end of the Upper Complex. The only unconformity occurs between the Lower and Middle Complexes; this break is well defined only in Unit 3, where it is clearly the result of construction activity by the site's inhabitants. In the other units, the Middle Complex seems to lie more conformably on the Lower Complex.

CHAPTER 6

ARCHITECTURE AND FEATURES: SECTORS I AND IV

This chapter covers only those architectural and archaeological features[45] that are significant for identifying activities carried out at Lo Demás or for relating the site's inhabitants to other occupants of the Chincha valley.

Sector I

Examination of the surface and the exposed, eastern quebrada profile of Sector I reveals one major architeetural element: low, cobble-and-mud-mortar walls. Standing walls are visible in the profile (*see* Fig. 11), whereas on the surface, only scattered cobbles can be seen. However, the surface outcrops do occasionally appear as small, aligned groups of cobbles set in mortar.

During the excavations in 1983 and 1984, the cobble and mud mortar walls were associated with the latest occupation of Sector I (Stratigraphic Complex D, Chapter 5). In the 1984 excavation area, a clay floor was built between the two north–south walls, and another floor was associated with the base of the east–west wall in the 1983 test trench. Fig. 12 shows the plan of the Complex D walls in both excavation areas and the probable connection between the two areas. The cobble walls apparently formed large, more or less rectangular rooms; one such room (Room I–1) lay between the north–south walls in the 1984 excavation area, and others were probably located to the east of the central wall (Room I–2) and to the north of the east–west wall in the 1983 excavation area (Room I–3).

In the 1984 excavations, *quincha* structures were found within the Upper Complex (D) but stratigraphically higher than the construction of the walls (Sandweiss, 1989:146, Fig. 19). Unit 4 contained a semicircular channel with a number of in situ, upright cane bases, and a hearth in association with the earliest floor of the semicircular *quincha* structure. Underneath this floor were two small, circular pits (5 cm diameter, 1 to 2 cm deep) filled with burnt fish, possibly offerings deposited in association with the construction of the *quincha* structure. Another, later hearth also apparently associated with this structure was found between Units 1 and 2. Straight channels, often with pieces of canes still in vertical position, were excavated in Units 1 and 2. All of the channels are higher stratigraphically than the cobble walls, showing that the *quincha* structures are part of Complex D.

Underlying the *quincha* structure in Unit 4, but still above the base floor of Complex D, was another large hearth (approximately 130 cm × 50 cm). Several other hearths were found in Complex D, including an ash zone next to an ash-stained segment of the wall in Subunit 2C. All of these hearths are in Room I–1, on the west side of the central cobble wall, and each is associated with a different sublevel of Complex D, which may indicate that Room I–1 was a locus of domestic aetivity throughout Complex D. However, the distribution of hearths may be biased by preservation and sampling. Because of erosion by the quebrada, Room I–1 covered slightly over twice as much area as Room I–2. Another Complex D hearth was located in Room I–3, Subunits A2 and A3, suggesting a second domestic locus in that room.

Thirty-nine pits were found during the excavation of Stratigraphic Complex D. Horizontal dimensions range from over 50 cm to under 5 cm, and depths range from a few centimeters to as much as 30 cm. Some of the pits were probably holes for roof posts, while others most likely served for household storage. The form of one of the pits at the base of Complex D in Unit 3[46] suggests that it may have served as a jar rest for a conical-based pot (Sandweiss, 1989: 149, Fig. 20). A conical base from a large storage jar excavated from Subunit 26D in Sector IV (Sandweiss, 1989:150, Fig. 21) and several similar bases from the quebrada near Sector IV show that such pottery was in use in the area.

Cobble and mud mortar walls are not present in Stratigraphic Complex C, the Middle Complex. Prepared and use-trampled floors are a defining element of this complex, but only one wall was found, made of up-ended slabs of the geological strata underlying the site (though the wall may have been made by mixing local sand with mud mortar to make a cement resembling these strata). The Middle Complex wall lies in Subunits 3A and 3C, with a slight extension into 2B, and runs approximately NNW–SSE. When first constructed, in association with a prepared clay bench and floor that overlies truncated midden strata of the Lower Complex, there may have been a narrow entrance in the middle of

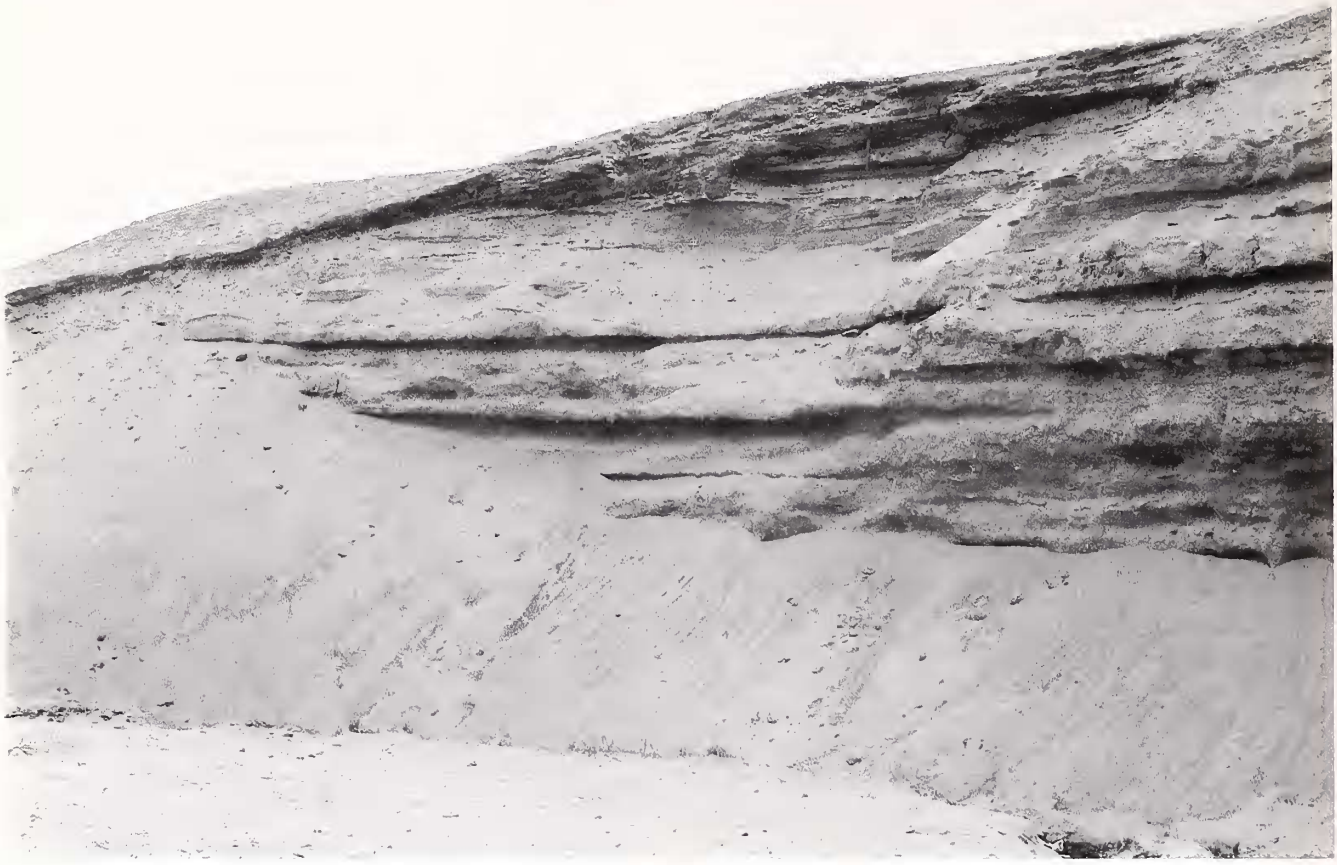


Fig. 11.—Quebrada profile on the east side of Sector I, view is NE to SW; note continuous archaeological deposits along top of quebrada. The Sector I excavations (Fig. 5) were located just west of the cobble and mud mortar walls in center top.

the wall. Capping the wall and dating to late within the Middle Complex is a wide clay platform topped with a single line of small cobbles.

A number of channels were found in Complex C, but they tend to be wider than those in Complex D. In the 1983 excavation area, a series of four parallel channels in two sets connect a number of circular pits (Fig. 13). Each set of two channels runs about 25 cm apart, whereas the two sets are separated by about 50 cm. Abundant fish remains occurred in the channels (*see* Chapter 9). These features may be the remains of drying racks for salted fish (Sandweiss, 1983, 1988); they closely resemble the plan of a traditional fish salting and drying workshop in Tambo de Mora (Fig. 14). In the modern workshop, lines of posts supporting the racks run in parallel groups of two with the members of each group close together; the groups are more widely separated. This arrangement allows maximum utilization of available space: workers can walk in the wider spaces between each set of racks, hanging fish both left and right. The channels connecting the postholes could have resulted from water dripping off of the fish as they dried.

Two features from different parts of Complex C also appear to have been involved in fish salting and drying. Located in Subunits 4D and 10B, these features consist of plant fiber mats associated with fish remains and small lumps of salt. Fiedler et al. (1943: 78–79) describe a method of salting *anchovetas* (the most common species of fish excavated from Lo Demás, *see* Chapter 9) by placing them on reed mats, throwing "salitre" (a naturally occurring mix of salt, sand, and other minerals) on the fish, and leaving them in the sun to dry. This technique would leave remains similar to the two features under consideration (*see* Fiedler et al., 1943:79).

As in the Upper Complex, pits of varying size are

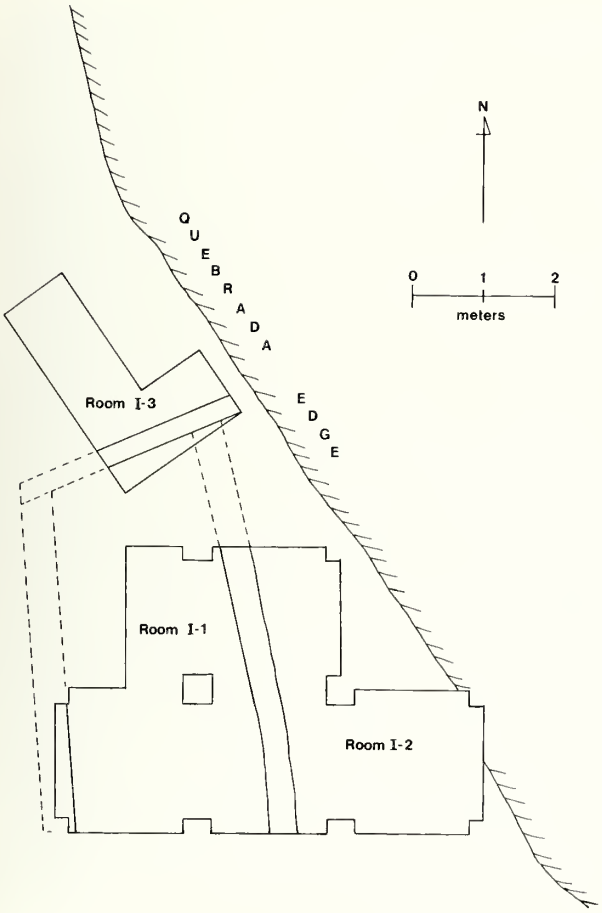


Fig. 12.—Plan of Complex D walls in the 1983 test trench and in the 1984 excavations in Sector I of Lo Demás, showing Rooms I–1, I–2, and I–3. The black-outlined, rectangular areas are the excavation units (*see* Fig. 5 for the layout and numbering of units and subunits). Solid, parallel black lines within the units are walls; dashed lines are projected walls.

common in the Middle Complex. Some were probably postholes. The pits associated with the possible fish-drying racks have already been mentioned. Dead animals were placed in a number of holes (*see* Chapter 9). In Subunit B3, an entire, grey-headed albatross (*Diomedea chrysostoma*) had been deliberately interred (Fig. 15); another bird was buried in a pit beneath the later wall in the same unit but was left in situ because the wall was not removed. These birds were most likely offerings. Two intact guinea pigs were found in separate pits in Complex C; two others from this complex were encountered together in a midden stratum. Although the guinea pigs (especially those in the pits) may have been offerings, their eondition strongly suggests that they were first involved in a curing ritual (*see* Chapters 9, 11). A fish head found in a small hole to the side of a large pit in Subunit 3C also appears to have been buried deliberately.

In Subunit 2D, a circular pit (26 cm diameter) contained a large fragment of red, oxidized pottery and abundant salt and food remains. This pit may have served as a jar rest for the pot represented by the sherd. Another shallow, circular pit in Subunits 1C and 10B contained a variety of small objects that suggest an offering, including: a piece of plant fiber (possibly a maize leaf) torn into strips and braided into a netlike form; a leg and part of a head from a figurine (Fig. 34); and a number of small, hard clay balls, averaging a little under one cm in diameter.

Only one hearth was uncovered in Complex C, in Subunits 1C, 2A, and 2B (it extended into the unexcavated portion of 1D). The hearth was larger and better defined than any of those in Complex D, and indicates that the area excavated in 1984 was

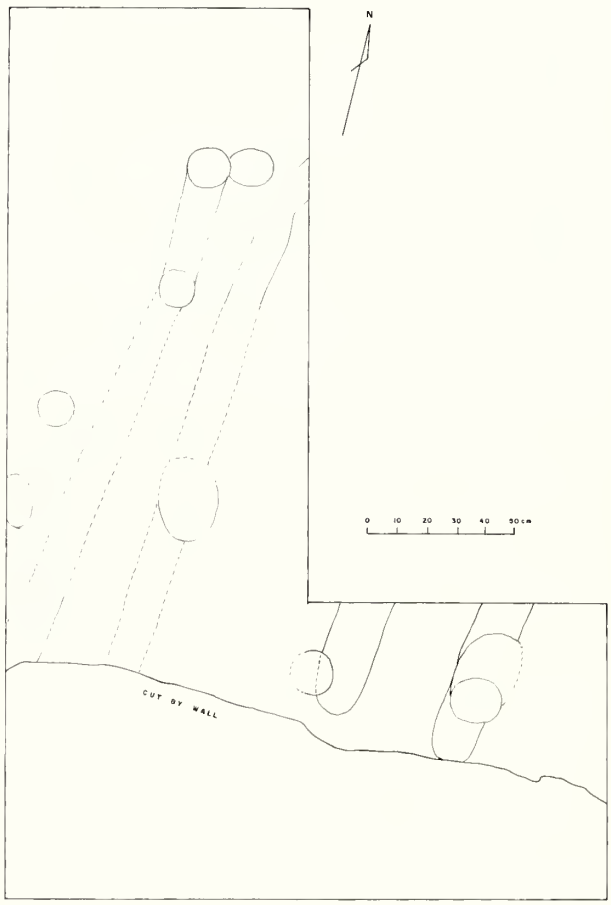


Fig. 13.—Plan of parallel channels and pits in 1983 Subunits A1, A2, A3, and B3, Sector I of Lo Demás (*see* Fig. 5). These features may be the remains of fish-drying racks.

Fig. 14.—Traditional fish salting and drying workshop in Tambo de Mora, Chincha, Peru. Note the double rows of posts separated by wider walkways.

a locus of domestic activity during the deposition of Complex C, a conclusion supported by the multiple floors. The area excavated in 1983, however, appears to have been a fish drying workshop at this time (*see above*).

As noted in Chapter 5, Complex B is interpreted as a set of midden strata deposited from a locus of domestic activity to the west of the excavation area. Consistent with this interpretation, Complex B has very few pit features and no architectural features. The scarcity of pits is particularly striking in contrast to the large number of such features in the two later complexes (C and D). One intact guinea pig was found in Complex B at the interface with the underlying Basal Complex. Also at this interface was an accumulation of burnt material, including pieces of clay, which may be the remains of a small hearth. Both the possible hearth and the guinea pig could be assigned to either Complex B or Complex A.

Associated with Complex A, the Basal Complex, one intact guinea pig had been placed on the underlying sterile ground beneath a natural overhang of the former quebrada edge in Subunit 3D, unaccompanied by any other special items. Otherwise, this complex has almost no features and very few remains of any kind.

Sector IV

The extremely limited excavations in Sector IV uncovered few significant features. However, the monumental nature of the structures in this sector, combined with the information provided by the quebrada profile, allowed recording of a number of architectural details. The two surviving structures, Building IV–1 and Building IV–2, have elements of form and construction that indicate the presence of elite residents in this sector of Lo Demás.

Building IV–1 is a low, stepped mound 3 to 4 m high (Figs. 3, 4, and 6). Its eastern and northeastern faces have been eroded by the quebrada, but the mound retains much of its original form. Building IV–1 is aligned north–south (unlike the east–west alignment of stepped platforms in earlier periods in Chincha, *see* Sandweiss, 1989:74–85); there are at least three platform levels on the southern side of the mound, with the highest level to the north of the structure's center.

Only one platform level is found to the north of the summit of Building IV–1, and all that remains of this level is part of a chamber labelled Room IV–1a. Only the south wall and a section of the west wall of this room survive, along with a triangular wedge of the original floor containing two postholes (Fig. 6). Chips of wood and other debris suggesting roof fall were found on the floor. At the time Room IV–1a was used, the walls were whitewashed and painted with a series of geometric birds. One bird in black outline with red fill was on the west wall, along with black lines probably pertaining to another bird, now eroded beyond recognition (Fig. 16). The south wall had one well-preserved bird painting with net-like cross-hatching filling the body, another figure that was still recognizable as a bird, and some indecipherable lines (Fig. 17). Red fill was not used in the south wall paintings. The surviving birds all share formal characteristics: rhomboidal bodies, tri-

Fig. 15.—Deliberately interred grey-headed albatross (*Diomedea chrysostoma*), Complex C, Subunit B3, Sector I, Lo Demás.

angular tails, long necks, long legs, circular heads with a round dot representing the eye, large double beaks, and wings that are variations on a step motif. Several of these characteristics (long legs and neck, large beak) suggest that the paintings represent marine species.

An Ica 10 pot (Menzel, 1976:Plate 63, No. 100, immediately postconquest)[47] provides a striking parallel with Building IV–1 and Room IV–1a at Lo Demás (Fig. 18). This vessel represents a stepped structure with three levels and white walls. The upper two levels have open sides but are covered by roofs supported by two posts. Small, modeled, anthropomorphic figures are visible on these levels. The lowest level has a modeled, seated, quadruped and a row of three painted bird figures that share formal characteristics with the figures in Room IV–1a: black outlining on a white background, rhomboidal bodies, long legs, large beaks, and circular heads with dot eyes. Fishing (sea) birds appear to have been important symbols for the fishermen of Chincha (*see* Chapter 9, section on Vertebrate Remains Other Than Fish).

The conjunction between the ceramic model from Ica and Building IV–1 at Lo Demás suggests that such structures were well-known on the south coast during late pre-Hispanic times. It also supports a very late date for Building IV–1, though given the inferred revivalist nature of Ica 10 pottery (*see* note 47), the strong identity between the structure and the pot does not require an Ica 10, Early Colonial assignment to Building IV–1. Room IV–1a was deliberately filled at some point in the history of Building IV–1; pottery from the fill dates to the late Late Intermediate Period, so Room IV–1a was filled during or after that time. All of the evidence indicates a Late Horizon date for Building IV–1 and makes sense in light of the Late Horizon date for the adjacent Building IV–2. The quebrada profile reveals continuous archaeological deposits between the structures, linking them temporally. The chronological assignment of Building IV–2 is based mainly

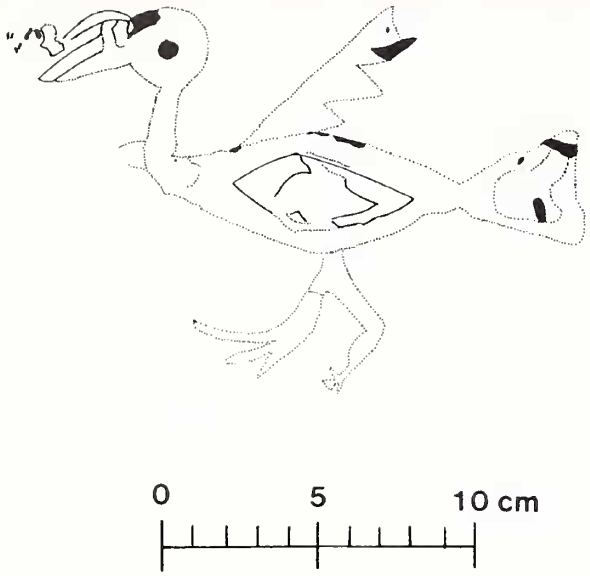


Fig. 16.—Drawing of the bird painting on the west wall of Room IV–1a in Building IV–1, Sector IV of Lo Demás. The figure is in black; faint traces of red were visible around the eye and filling the central rhomboid.

on the ceramics recovered from Subunit 26D, the radiocarbon dates, and the use of rectangular *adobes* (*see* Chapters 5, 7, 8, and 11). Whereas Building IV–1 was built of *tapia* walls with occasional cobbles and only one visible *adobe* wall, most of the major walls of Building IV–2 seen in the quebrada profile are made of large, rectangular *adobes* and only a few are of *tapia* (Fig. 19). In Chincha, large rectangular *adobes* are associated with Inka structures[48] (Santillana, 1984; Wallace, 1972; *see* Chapter 4). The construction materials used for Building IV–2 therefore support the Late Horizon date for it and, by association, for Building IV–1.

Building IV–2 underwent at least two phases of construction as revealed by the quebrada profile (Fig. 19). During the earlier phase, a number of floors and *tapia* walls were built. The southernmost rectangular *adobe* wall may have been built at this time; however, the use of rectangular *adobes* and the retaining function of the wall (Sandweiss, 1989:164, footnote 109) suggest that it was built after the *tapia* walls, at the very start of the second construction phase. During the second and major building stage, the central portion of Building IV–2 was levelled with midden fill on which clay floors and rectangular *adobe* walls were erected. Following this construction, the building gradually filled in, first from human deposition (as recorded in the strata of Subunit 26D) and late from wind-blown sand. The dating of the structures that once existed to the north of Lo Demás (*see* Chapter 5) as Late Horizon is based only upon their apparent association with the surviving buildings of Sector IV. No traces of these structures or associated materials are left.

Fig. 17.—Drawing of the bird paintings on the south wall of Room I–1 in Building IV–1, Sector IV of Lo Demás. The figures are entirely in black on a whitewashed background; there were no traces of red paint on the south wall.

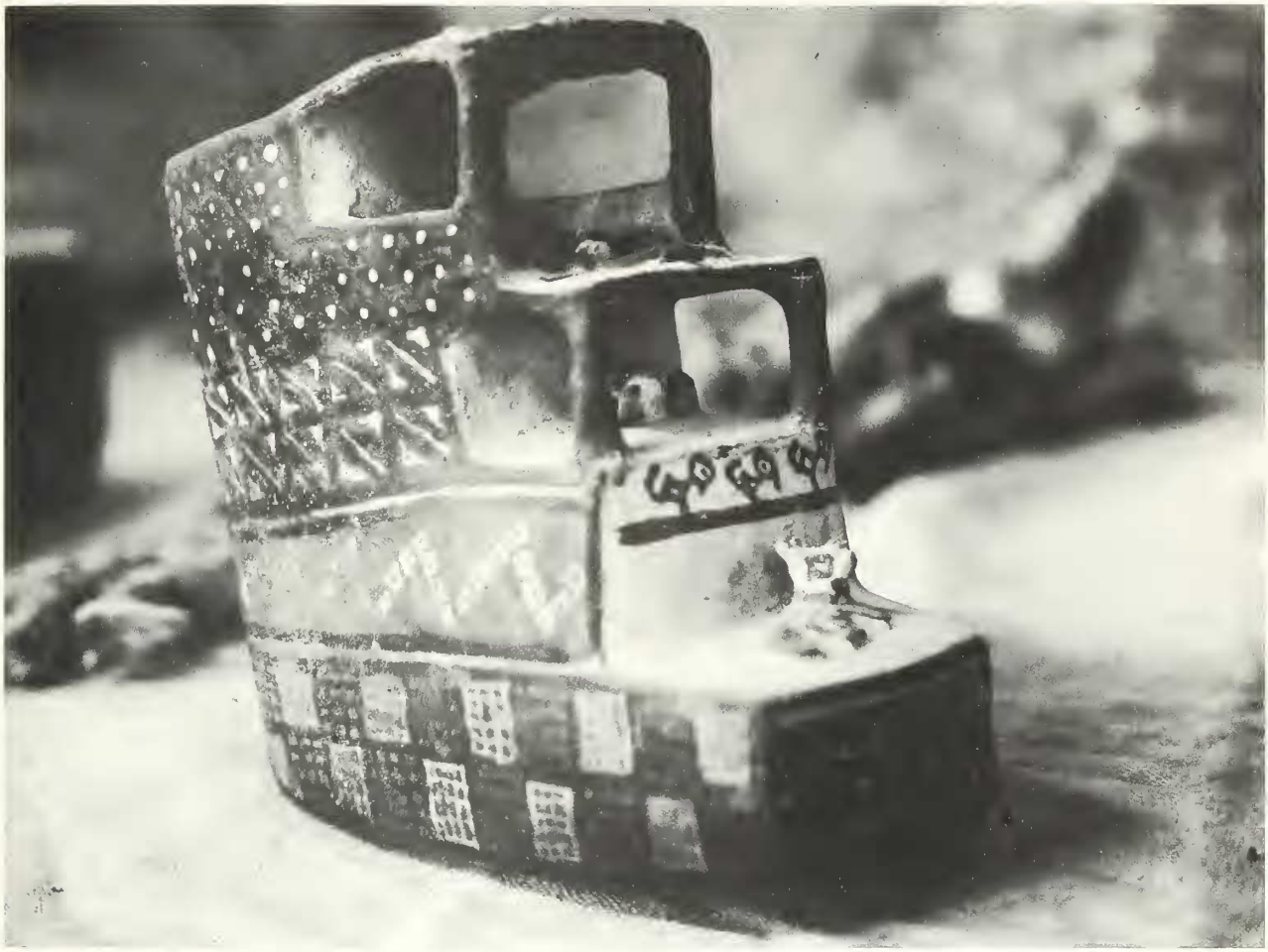


Fig. 18.—Ica 10 pot showing a structure similar to Building IV–1 and Room IV–1a at Lo Demás. This vessel is in the Museo Regional de Ica; photographed with permission of Sra. de Pezzia.

CHAPTER 7

CERAMIC VESSELS

This chapter discusses the late pre-Hispanic ceramic vessels from Lo Demás. Other categories of ceramic artifacts (figurines, spindle whorls, and "half-bobbin" objects) are considered in Chapter 8. Though small,[49] the pottery sample is still informative.

Compared with most ceramic-age sites which I have seen in Peru, Lo Demás seems to have a particularly low density of pottery, an observation supported by quantitative comparison of pottery density between the fishing site and a contemporary (late pre-Hispanic) farming site in the Chincha valley (Sandweiss, 1988:106; Table 4).

The sample of pottery from the excavations in primary deposits totals 3,552 sherds (Table 4), with 2,944 from Sector I (Subunits A1–3, B3, C3, 1A–D, 2A–D, 3A–D, 4A–D, 10B, and 10D) and 608 from Sector IV (Subunit 26D). The pottery from Room IV–1a is not included, because it is from a secondary context (fill). A sample of 1,690 sherds excavated by Patrick Carmichael of the Chincha–Pisco Archaeological–Historical Project in 1984 at the late pre-Hispanic farming site of Huacarones (PV 57–91) provides comparative data (Table 4). Huacarones is located in the Chincha valley some 10 km inland from Lo Demás (*see* Fig. 1).

Menzel's (1966) analysis of the late pre-Hispanic pottery excavated in Chincha by Max Uhle (1924;

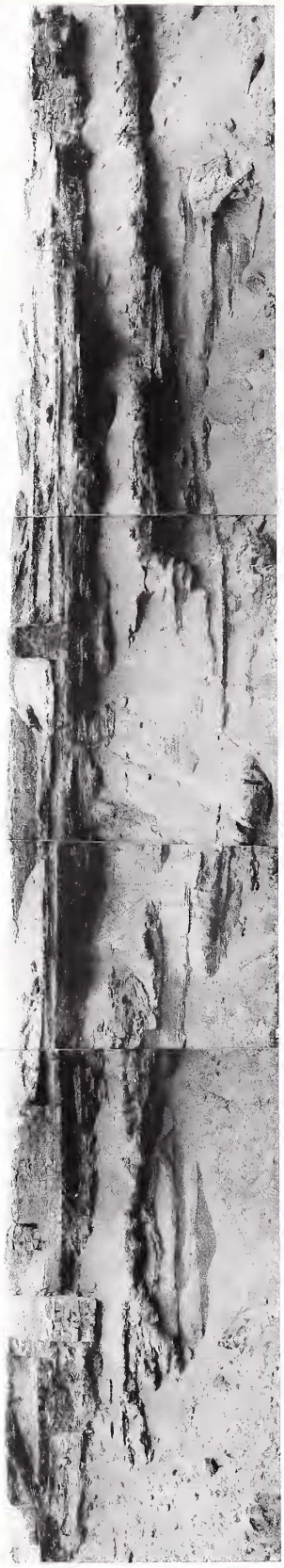


Fig. 19.—Composite photograph of the quebrada-cut east profile of Building IV–2, Sector IV, Lo Demás. The massive adobe walls cut perpendicularly to the quebrada at the left (south) and right center of the photograph are the south and north walls, respectively, of Building IV–2 (*see* Figs. 4 and 6). View is east to west.

Table 4.—*Sherds by fragment types, Lo Demás and Huacarones. Fragment types: 1, rim; 2, neck without rim; 3, body; 4, handle; 6, base; 7, support; 8, disk. Fragment type 5 was conflated with fragment type 4. Sherds which were too small to be analyzed (under 1 cm²) are not reported here.*

Complex	Fragment Type 1	2	3	4	6	7	8	Total
a) Lo Demás Sector I, all excavations.								
A	3	1	16	—	—	—	—	20
B	65	3	69	2	2	—	1	764
C	92	10	984	—	6	2	1	1,095
D	56	4	992	5	1	3	4	1,065
Total	216	18	2,683	7	9	5	6	2,944
b) Lo Demás, Sector IV, Subunit 26D.								
Total	63	3	535	2	1	—	4	608
c) Lo Demás, Sectors I and IV combined total.								
Total	279	21	3,218	9	10	5	10	3,552
d) Huacarones, Unit C total.								
Total	159	18	1,473	9	16	—	15	1,690

Kroeber and Strong, 1924) is particularly useful for two reasons. First, the Uhle sample consists mostly of whole vessels; I found no whole vessels in either Sector I or Sector IV of Lo Demás. Second, Menzel was able to construct a preliminary typology and sequence of late pre-Hispanic (Late Intermediate Period 8 and Late Horizon) vessels from Chincha; the Lo Demás sample is too small, and vessel form too poorly indicated by the available diagnostic sherds, to allow a reliable typology.

However, Menzel's typology provides only limited help with the Lo Demás pottery because 1) the Uhle sample came exclusively from tombs and does not include many vessels considered by Menzel as "utilitarian,"[50] whereas the entire Lo Demás sample discussed here came from midden context and consists mostly of vessels whose utilitarian or domestic nature is indicated by a high frequency of sooting; 2) Menzel concentrates on vessel form and discusses decoration only briefly and without illustration; and 3) the associations of diagnostic pottery from primary contexts at Lo Demás call into question some aspects of Menzel's division of late pre-Hispanic Chincha ceramics into two chronological groups, the "Chincha style" and the "post-Chincha assemblage" (Menzel, 1966:79 ff.).

Methodology

Variables on Lo Demás potsherds were recorded by Justo Cáceres M. and Elba Manrique M. (Cáceres M., 1984). Analysis of these data involved tabulat-

ing and comparing key variables by stratigraphic complex (in Sector I), by sector (I and IV), and by site (Lo Demás and Huacarones). Diagnostic features of the Lo Demás potsherds were also compared with the late Chincha vessels discussed by Menzel (1966) and with other late pre-Hispanic pottery, especially ceramics from nearby Ica (Menzel, 1976) and Inka wares from Cuzco (Rowe, 1944). Results are presented in two sections, on vessel use and on chronology and cultural affiliations. Data on use come principally from descriptive aspects of the sherd assemblages (including all morphologic categories) and from the reconstruction of vessel form using rim sherds. Data on chronology and cultural affinities are derived from the analysis of decoration, and to a lesser degree, vessel form.

Table 5.—*Count and percent of exterior sooting, all sherds, Lo Demás and Huacarones. The counts in this table include all sherds which were sooted on the exterior alone or on exterior and interior.*

	Count	Percent sooted
Sector I—Lo Demás		
Complex A	13/20	65.0
Complex B	445/764	58.2
Complex C	575/1,095	52.5
Complex D	654/1,065	61.4
I total	1,687/2,944	57.3
Sector IV—Lo Demás		
26D total	339/608	55.8
Huacarones		
Total	398/1,690	23.6

Vessel Use

The majority of sherds from both sectors (I and IV) come from cooking vessels; pottery apparently was also used for serving/eating, as liquid containers, for dry storage, and possibly for nondomestic purposes. In comparison, far fewer of the sherds from Huacarones come from cooking vessels; other uses of pottery at the farming site seem to have covered the same range as at Lo Demás, but with different emphases. Evidence for liquid containment at Huacarones is much less, whereas dry storage seems to have been more important.

Sooting

Exterior soot on potsherds from Lo Demás is the clearest indication that the primary use of pottery at the site was cooking. In most cases, the sherds are so heavily sooted or charred that they must certainly have been exposed to fire.[51] The frequency of exterior-sooted sherds for Sectors I and IV is almost identical (Table 5). Within Sector I, the frequency of exterior-sooted sherds from Stratigraphic Complexes A, B, C, and D differs by 12.5% at most, and the frequencies do not show a trend through time (Table 5).

The frequency of exterior-sooted sherds from Huacarones is less than one half that in the Lo Demás sample (Table 5), suggesting that ceramic activities other than cooking (i.e., not involving fire-processing) were far more important in Huacarones than in Lo Demás. One possibility is that the inhabitants of Huacarones made greater use of pottery vessels for storage of agricultural products (Sandweiss, 1988), a hypothesis bolstered by data on sherd thickness and vessel form (*see below*). First, a caveat is in order: the Huacarones pottery sample came from a single excavation area on a large, artificial mound, while the Lo Demás sample came from a limited area in nonmonumental structures in Sector I and from the small test pit (Subunit 26D) adjacent to a large rectangular compound in the monumental part of the site (Sector IV) (*see* Chapter 5). Given the different contexts, these samples may not be directly comparable. However, the Lo Demás Sector IV sample has virtually the same percentage of sooted sherds as the Sector I sample (Table 5), yet comes from a context quite similar to the Huacarones excavation area. The uniform proportion of sooted sherds in all excavated areas of Lo Demás supports the interpretation that the differences in ceramics between Lo Demás and Huacarones reflect functional differences.

Sherd Thickness

Sherd thickness is difficult to measure and offers limited information. For the Lo Demás and Huacarones samples, each sherd was measured only once (in tenths of millimeters), on a representative edge, and all figures were rounded to the nearest millimeter. Even so, only the grossest of trends are likely to be meaningful, and the data need to be lumped into larger increment categories.

Preliminary inspection of the data suggests thicker sherds occur more frequently at Huacarones than at Lo Demás. Because storage vessels tend to be fairly large relative to cooking vessels, this observation is consistent with the hypothesis generated by the sooting data (*see above*) that more ceramics were de-

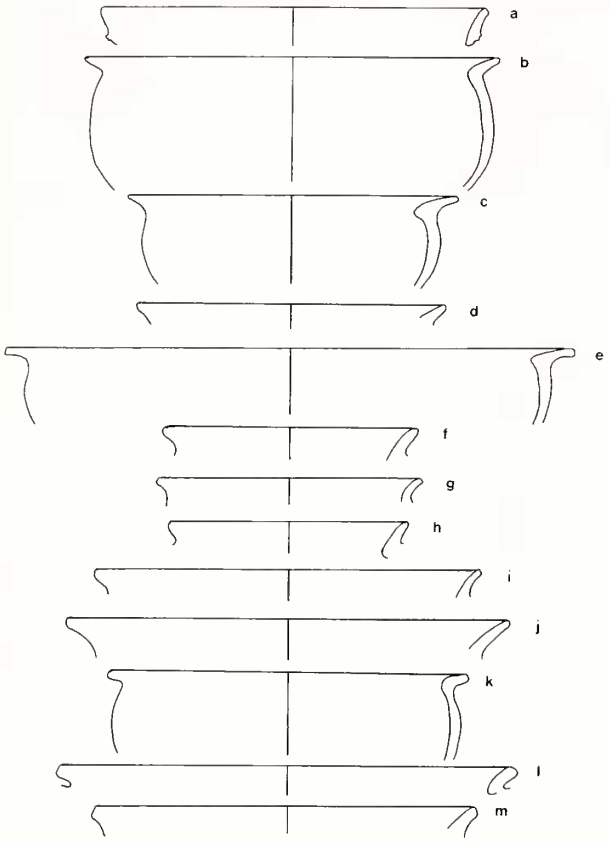


Fig. 20.—Angular rim bowl sherds from Lo Demás. Sector I: a–b (Stratigraphic Complex D), c–f (Complex C), g–j (Complex B); Sector IV: k–m. See text and Table 6 for further information.

voted to storage at Huacarones than at Lo Demás. Within the fishing site, results for Sector IV seem to be intermediate between Sector I and Huacarones, which makes sense given that Sector IV probably housed one of the local fishing lords: storage should concentrate around the lords, one of whose functions was the redistribution of goods to their subjects (*see* Chapter 2). According to the documents, specialists paid tribute in the goods "of their office." Under this system, lords of specialized groups would accumulate mainly the products of their group's specialty, both as the tribute the lords received for themselves and as the tribute which they paid to the Chincha and Inka lords on behalf of their group. Unlike agricultural produce, fish are not usually stored in pots (cf. Netherly, 1977:63), so fishing lords would have had less need for storage pottery than would farming lords.

Vessel Form

Whole vessels were not recovered from Sectors I and IV of Lo Demás, so almost all information on vessel form must come from the analysis of rim sherds (the ceramic collection includes very few other sherds which are diagnostic of form). Only 83 rim sherds are sufficiently preserved to allow measurement of the rim angle and diameter. Of these, not all preserve enough of the body to allow assignment to a shape category.[52] Nevertheless, seven basic shapes can be identified in the ceramic inventory from Lo Demás. The Huacarones sherd collection has 108 rim sherds sufficiently preserved to allow measurement of rim angle and diameter; the shape inventory is similar to that from Lo Demás.

Angular rim bowls.—This vessel shape is one of the most common in both the Lo Demás (Fig. 20, Table 6) and Huacarones collections (Sandweiss, 1989:191, Fig. 29, 186–188, Table 10); it is also the shape which can be reconstructed and assigned a use with the greatest confidence. Angular rim bowls have a wide orifice with a slight restriction or throat below a short, sharply everted rim or collar. Sherds assigned to this category have enough of the shoulder inflection to show the rim's shortness (relative to rim thickness and diameter) and sharp angle (from the vertical).

From the few examples for which total dimensions can be approximated, the rim diameter of Chincha angular rim bowls is somewhat more than twice the height; the maximum diameter of the vessel body is about the same as the rim diameter. Temper tends to be medium to medium fine. The collared jar specimens were all fired in an oxidizing environment;[53] paste color ranges from beige through red-orange to orange. Many of the specimens have an interior red slip (Table 6).

Three angular rim bowl rims were found in Subunit 26D in Sector IV and 10 in Sector I of Lo Demás (Fig. 20, Table 6); they were also present in many levels of the test unit at Huacarones.

All but one of the Lo Demás rim sherds that clearly fit the angular rim bowl category have exterior soot, indicating that this form was used as a cooking vessel. The shape fits the general criteria for a cooking pot rather well; such vessels tend to be short, squat, and not too large, with a wide base, a wide orifice, and a flaring or incurving lip (Costin, 1986: 205–207; *see also* Rice, 1987:236–241; Henrickson and McDonald, 1983:631). Rounded contours (Rice, 1987:237) and a slight constriction and/or low neck (Rice, 1987:239–240) are also desirable features for cooking vessels.

The form of the Lo Demás angular rim bowls is similar to that of the collared jars found in the Uhle collection (Menzel, 1966:85–86 and Plate X–14).

Although not illustrated, the one sooted utility vessel from the Chincha style burials seems to be an angular rim bowl identical to those from Lo Demás (*see* Sandweiss, 1989:190, footnote 125). In describing this vessel, Menzel succinctly describes the differences between the collared jars and angular rim bowls: "The collar [of the bowl] is much shorter and more everted and may be described more aptly as an everted rim" (Menzel, 1966:95). This vessel has a "heavily sooted bottom" (Menzel, 1966:95), indicating correspondence in use as well as form with the Lo Demás specimens. Menzel notes that the Cemetery B vessel came from a burial which also contained a "bottle/jar which probably predates the [LIP] Epoch 8 pottery" found in the other burials (Menzel, 1966:95). If this chronological attribution is correct, it would indicate that use of angular rim bowls for cooking is an old Chincha tradition clearly pre-dating the Inka conquest of the valley.[54]

Angular rim bowls are also a common feature of the Huacarones collection, which contains both sooted (9) and unsooted (13) specimens (Sandweiss, 1989:Fig. 29, Table 10). The fact that many Huacarones examples are unsooted suggests that angular rim bowls there had some use (perhaps serving) in addition to cooking. An alternative explanation is that some pots were broken before being put into use, but the fact that over half of the collared bowls from Huacarones are unsooted argues against this interpretation. The Huacarones angular rim bowl sherds have the same range of temper size, but the paste tends to be darker (mostly red-brown and grey-orange) than the Lo Demás examples. Some of the sooted specimens from Huacarones have an interior red slip, as at Lo Demás; many of the unsooted examples exhibit this feature on both interior and exterior surfaces.

The Huacarones angular rim bowl sherds include two examples which resemble an Ica 9 form (Menzel, 1966:Plate XII–35) found in a burial with Chincha style pottery (Sandweiss, 1989:Fig. 29a, b). This form, which Menzel (1976:36–37) calls the "Angular-Rim Dish," is diagnostic of the Late Horizon in Ica, as is the angular rim bowl form; as the names imply, the two vessel types are quite similar. One of the Lo Demás angular rim bowls also resembles slightly the angular rim dish form (Fig. 20h).

The Huacarones sherd sample includes several other angular rim bowl variants not seen in the Lo Demás assemblage (Sandweiss, 1989:195 and Figs. 29q–t, 30a, b).

Constricted bowls.—Constricted bowls are relatively common in the Lo Demás and Huacarones collections, though only one was found in Sector IV of Lo Demás (Fig. 21, Table 6) (Sandweiss, 1989: Fig. 32, Table 10). This vessel category is characterized by a constricted, neckless orifice, with the rim diameter notably less than the maximum diameter. On the few fairly complete profiles, vessel height and rim diameter seem about equal. Maximum width appears to be about 1.25 to 1.50 times vessel height and rim diameter; however, some rim sherds appear to come from taller vessels (narrower relative to height).

Of the 15 rim sherds from Lo Demás which can be assigned to the constricted bowl category, seven are sooted and eight are not (Fig. 21; Table 6). The sooted specimens range in rim diameter from 10 to 22 cm, while the unsooted fragments tend to have smaller diameters, measuring between 6 and 19 cm. Both sooted and unsooted sherds were fired in an oxidizing atmosphere. Paste on the sooted specimens tends to be orange, with one specimen each of red-brown and red-orange. Surface color ranges from orange to red-brown; one specimen has a red slip on the interior. Unsooted specimens have a greater variety of paste colors, including grey-red, brown-red, orange-red, orange, and tan. Surface colors include orange, brown-red, grey, and red; the red and grey are applied as interior and/or exterior slips.

All but one of the constricted bowls came from Sector I; the one example from Subunit 26D of Sector IV is unsooted. One heavily sooted specimen from Stratigraphic Complex B, Sector I, has a vertically-oriented, tubular handle with the upper end attached just below the lip (Fig. 21n). Menzel (1966: 88 and Plate XII–32) mentions only one vessel which could fall into the constricted bowl category; this pot came from Uhle's (1924) Cemetery B, directly east of Lo Demás Sector I. Menzel (1966:88) describes the vessel as a "*thinned rim bowl* with vertical convex sides" and places it in her LIP 8/early LH Chincha style.

Constricted bowls apparently had multiple uses at Lo Demás. The sooted vessels were employed in cooking. Lacking everted rims or lips, they were probably not used for cooking substances which could be poured. To use such vessels in cooking, direct access to the contents is necessary for stirring, etc. The sooted examples from Lo Demás range in orifice diameter from 10 to 22 cm, wide enough to allow direct access. The use of the unsooted examples is less obvious. All of the examples with smaller orifices (under ten cm diameter), which

Table 6.—*Rim sherds from Lo Demás illustrated in Figs. 20–23 and 25–27. Abbreviations: Fig., figure reference for this study; Cat., catalogue number (Sandweiss, 1989:Appendix B); SC, stratigraphic complex in Sector I; Su, subunit; L/F, level or feature within excavation unit. Under Form: AR, angular rim bowl; CB, constricted bowl; WJ, wide-mouthed jar; RJ, restricted jar; Bt, bottle; OB, open bowl; PD, plate/dish. Under Paste and Surface: b, beige; br, brown; cr, cream; g, grey; o, orange; r, red; s, slip; ext, exterior; int, interior (if neither int or ext is specified, both surfaces are slipped). Under Temper: 1, coarse; 2, medium; 3, medium–fine; 4, fine. Under Soot: 0, no soot; 1, exterior soot; 2, interior soot; 3, soot on both sides. Diameter is in cm.*

Fig.	Cat.	SC	Su	L/F	Form	Paste	Surface	Temper	Soot	Diameter
					Sector I					
20a	6	D	A1	2a	AR	o	r-br	2	1	26
20b	788	D	4D	434b	AR	r-o	br	3	1	28
20c	1055	C	3D	7	AR	r-o	int r s	2	1	22
20d	1747	C	4D	494	AR	b	int r s	2	2	21
20e	1105	C	3D	7b	AR	o	g-o	2	1	38
20f	1755	C	4B	495	AR	r-o	int r s	2	1	17
20g	1350	B	10B	21	AR	g-o	r-o	2	3	18
20h	1242	B	3B	333	AR	r-o	int r s	2	1	16
20i	1077	B	10D	19	AR	b	g	2	3	26
20j	1469	B	3A	9b	AR	r-o	int r s	2	1	30
21a	16	D	A1	2ciii	CB	o	r-br	2	3	22
21b	6	D	A1	2a	CB	o	r-br	2	1	10
21c	17	D	A1	2ciii/d	CB	o	r-br	2	3	15
21d	633	D	2C	238	CB	r-o	ext r s	2	0	15
21e	580	D	2A	2cW	CB	b	int r s	2	0	14
21f	584	D	4D	4ic	CB	r-o	r s	2	0	12
21g	830	C	10D	14	CB	r-o	r-o	2	1	16
21h	888	C	3B	6	CB	g core	g-o	2	1	19
21i	57	C	A3	3bii	CB	g-o	g	2	0	7
21j	1631	C	4D	14i	CB	b	g	3	0	6
21k	1418	B	10D	1040	CB	r-br	int r s	2	1	15
21l	1418	B	10D	1040	CB	o	o	2	1	15
21m	1621	B	2B	13ib-id	CB	g-o	ext g s	2	0	7
21n	1844	B	4B	I1409	CB	r-o	r-o	2	1	14
22a	42	D	B3	2b	WJ	o	o	2	0	48
22b	536	D	10D	2	WJ	r-br	int r s	2	1	26
22c	888	C	3B	6	WJ	r-br	r-br	2	1	38
22d	1500	C	2C	10i	WJ	r-br	r-br	1	0	37
22e	1075	C	3B	330b	WJ	g core	r-br	2	0	36
22f	731	C	1A	10W	WJ	r-o	rp s	2	0	28
22g	1690	C	4B	485	WJ	r-o	int r s	2	1	27
22h	1731	B	2C	15	WJ	r-o	int r s	2	0	30
23a	931	D	4C	5b	RJ	r-o	ext g s	2	0	20
23b	17	D	A1	2d	RJ	r-br	r-br	2	1	22
23c	533	D	4C	4	RJ	r-br	r-br	2	1	14
23d	690	C	10B	7	RJ	b	b	2	0	14
23e	817	C	1C	117	RJ	r-br	r-br	2	1	18
23f	1621	B	2B	13ib-id	RJ	r-o	ext r s	2	0	22
23g	1731	B	2C	15	RJ	r-o	int r s	3	1	19
23h	1621	B	2B	13ib-id	RJ	o	r s	2	2	19
23i	1847	B	4B	24i	RJ	o	r s	2	0	10
23j	1535	B	3B	12	RJ	b	b	3	0	13
23k	1563	B	3D	9b	RJ	r-o	r-o	2	0	20
23l	1201	B	1C	25W	RJ	r-o	r-o	3	0	9
23m	1621	B	2B	13ib-id	RJ	r-o	ext r s	1	0	16
23n	1086	B	10B	19	RJ	r-o	r-o	2	0	12
23o	1850	B	4D	25	RJ	o	o	3	0	19
23r	1201	B	1C	25W	RJ	r-o	r-o	3	0	9
23t	1641	C	4B	14	RJ	g core	o	3	0	9
25a	1184	D	4B	440	Bt	r-o	r-o	3	0	6
25b	1706	C	4D	17i	Bt	o	o	3	0	8
25c	818	C	2B	7b	Bt	o	int r s	3	0	5

Table 6.—*Continued.*

Fig.	Cat.	SC	Su	L/F	Form	Paste	Surface	Temper	Soot	Diameter
25d	1426	C	2C	8b	Bt	o	ext r s	4	0	7
25e	834	C	2B	8b	Bt	r-o	r-o	3	0	6
25f	1477	C	4D	9	Bt	g	g	3	0	8
25g	810	C	3B	5c	Bt	b	b	3	0	2
25h	1847	B	4B	24i	Bt	o	r s	2	0	6
25i	1742	B	2C	292	Bt	b	r s	3	0	7
25k	1253	C	2A	262b	Bt	r-o	r-o	2	1	8
26a	10	D	A2	2b	OB	g-o	g-o	2	0	24
26b	19	D	A2	2d	OB	r-br	ext r s	2	0	18
26c	18	D	A2	2d	OB	r-br	ext r s	2	1	18
26d	767	D	4B	5	OB	o	r s	2	1	21
26e	82	D	A2	f17	OB	o	r-br	2	1	26
26f	17	D	A1	2b–d	OB	r-br	ext r s	2	0	18
26g	428	D	3A	3	OB	r-o	r-o	3	1	14
26h	1535	B	3B	12	OB	b	b	2	0	18
26i	1850	B	4D	25	OB	o	r-o	2	0	20
26l	1647	C	4B	479	OB	g-o	ext cr s	3	0	13
27a	1193	B	1C	26W	PD	r-o	r-o	3	0	17
27b	1827	B	4D	23i	PD	r-o	int r s	3	0	24
					Sector IV					
20k	1831		26D	12b	AR	b	int r s	2	1	24
20l	1858		26D	16	AR	r-br	r-br	2	1	30
20m	1858		26D	16	AR	o	int r s	2	1	26
21o	1841		26D	13	CB	o	o	3	0	8
22i	1717		26D	3	WJ	r-o	int r s	2	0	29
23p	1852		26D	13bi	RJ	r-o	r-o	3	0	20
23q	1851		26D	13b	RJ	o	o	3	0	20
23s	1743		26D	5c	RJ	g-o	int r s	2	1	15
25j	1800		26D	10	Bt	r-o	r-o	2	0	7
26j	1717		26D	3	OB	r-o	int r s	2	1	14
26k	1853		26D	14b	OB	g	g	3	0	10
27c	1726		26D	5	PD	r-o	o	3	0	23

would be inconvenient for stirring or other manipulation during cooking, are unsooted.

The constricted bowl form is appropriate for cooking and for serving and eating: vessels in both functional categories tend to be short and squat for stability, to have a relatively wide orifice for ease of access, and to have a slight restriction at the orifice to avoid spills (Costin, 1986:205–207; Henrickson and McDonald, 1983:631–632).[55] In contrast, the constricted bowls do not fit the criteria for storage vessels very well. Long-term dry storage containers tend to be tall and thin, with more restricted orifices than the constricted bowls and with an everted or rolled rim (Henrickson and McDonald, 1983:632–633; Costin, 1986:207–208). Short-term dry storage vessels tend to be wider (Henrickson and McDonald, 1983:362–363). Wet storage vessels intended for both long- and short-term storage tend to be tall and thin, with rolled or everted rims; highly constricted openings are not particularly common (Henrickson and McDonald, 1983:363; Costin, 1986:207–209). In light of these ethnographic data, it is possible that in addition to cooking, the constricted bowls at Lo Demás were used for consumption (serving and/or eating) and perhaps for short-term storage of dry goods. Some of the vessels could have been used in sequence for cooking, serving, eating, and storing the same contents, while others served only some of these uses; as Rice (1987: 232–233) points out, "vessels typically have multiple uses during their life spans."

At Huacarones, 14 examples of constricted bowls were recovered (Sandweiss, 1989:Fig. 32, Table 10); one is exterior-sooted and the rest are unsooted. The unsooted specimens have rim diameters ranging from 7 to 23 cm, similar to the overall range of the Lo Demás constricted bowls. The exterior-sooted specimen has a rim diameter of 18 cm. The recon-

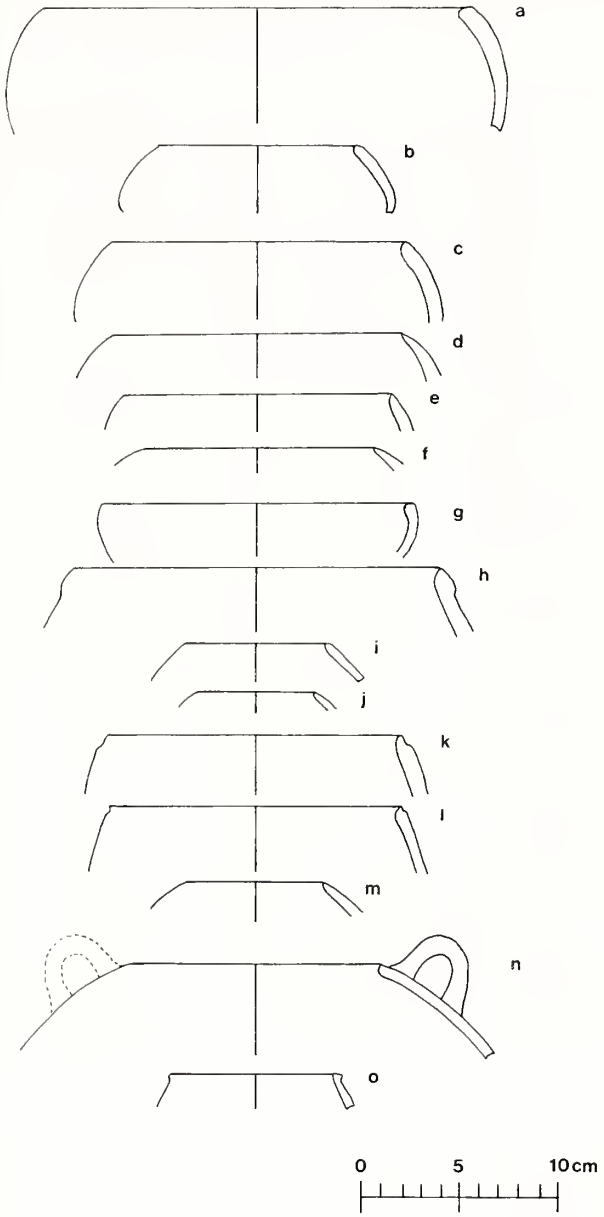


Fig. 21.—Constricted bowl sherds from Lo Demás. Sector I: a–f (Stratigraphic Complex D), g–j (Complex C), k–n (Complex B); Sector IV: o. See text and Table 6 for further information.

structed dimensions of the Huacarones constricted bowls seem to be about the same as those from Lo Demás; as at the fishing site, a few examples from Huacarones appear to come from straighter-sided, narrower vessels. The Huacarones constricted bowls do not shed any additional light on the use(s) of this vessel category in Chincha.

Jars.—Menzel (1966:81) writes that for her LIP 8/early LH Chincha style fancy ware, "by far the most common category . . . consists of jars with necks." Necked vessels also occur in Menzel's (1966) late LH post-Chincha Assemblage, though with less frequency and a greater variety of forms. Jars with necks are quite common in the Lo Demás pottery assemblage.[56] None of the jar neck sherds retain any significant portion of the body, so it is impossible to determine the shape(s) of the jars; variation in rim size and neck form allow some differentiation. I have tentatively classified necked vessels into three categories based on rim diameter: wide-mouthed jars (diameter $\geq$ 25 cm), restricted jars (diameter $<$ 25 cm and $>$ 8 cm), and bottles (diameter $\leq$ 8 cm).

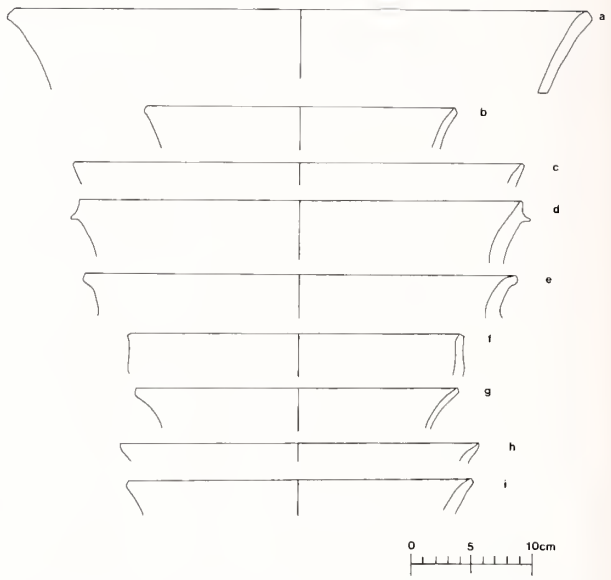


Fig. 22.—Wide-mouthed jar sherds from Lo Demás. Sector I: a, b (Stratigraphic Complex D), c–g (Complex C), h (Complex B); Sector IV: i. See text and Table 6 for further information.

Wide-mouthed jars.—Rim sherds assigned to this category have a diameter of 25 cm or more and are everted or flaring. The rim diameter on these vessels seems to be slightly greater than the throat diameter. Wide-mouthed jar sherds were distinguished from angular rim bowl sherds by a longer (relative to width and diameter) and more vertical (less sharply everted) rim. Nine sherds from Lo Demás are classified as wide-mouthed jars (Fig. 22; Table 6); six are unsooted and three are sooted. The unsooted rims tend to be thicker and to have a wider diameter than the sooted rims. Only one of the wide-mouthed jar neck sherds has the corner point where the neck joins the shoulder of the vessel (Fig. 22e), and it is possible that the other sherds actually came from

large dishes or basins. Menzel (1966) does not illustrate any late pre-Hispanic Chincha vessels with a rim diameter of 25 cm or greater, so her work offers no guide to reconstructing this vessel category.

Both sooted and unsooted wide-mouthed jar sherds were fired in an oxidizing atmosphere. The sooted sherds have a red-brown or red-orange paste; two have an interior red slip. Rice (1987:241) notes that a "slip over the mouth and rim area makes cleaning easier," an important characteristic for cooking, eating, and serving vessels. The unsooted specimens include the same paste colors in addition to one orange paste sherd and one incompletely oxidized sherd with a grey core. Two of the unsooted sherds have an interior red slip, one has an exterior red slip, and one has a red-purple slip on both surfaces. Rim diameters for the sooted sherds are 26, 27, and 38 cm, while the unsooted rims range from 28 to 48 cm in diameter. All but one of the wide-mouthed jar sherds came from Sector I; the one exception, an unsooted specimen, came from Subunit 26D in Sector IV.

The sooted wide-mouthed jar sherds come from vessels presumably used for cooking. The shape of two of these sherds (Fig. 22a, b) resembles the collar on a Chincha style collared jar illustrated by Menzel (1966:Plate X–14).[57] This collared jar is related morphologieally to the Lo Demás angular rim bowls described above, the only significant differences being the greater height of the jar's collar and the higher value of the height to width ratio for the jar. The angular rim bowls at Lo Demás were used for cooking (*see above*).

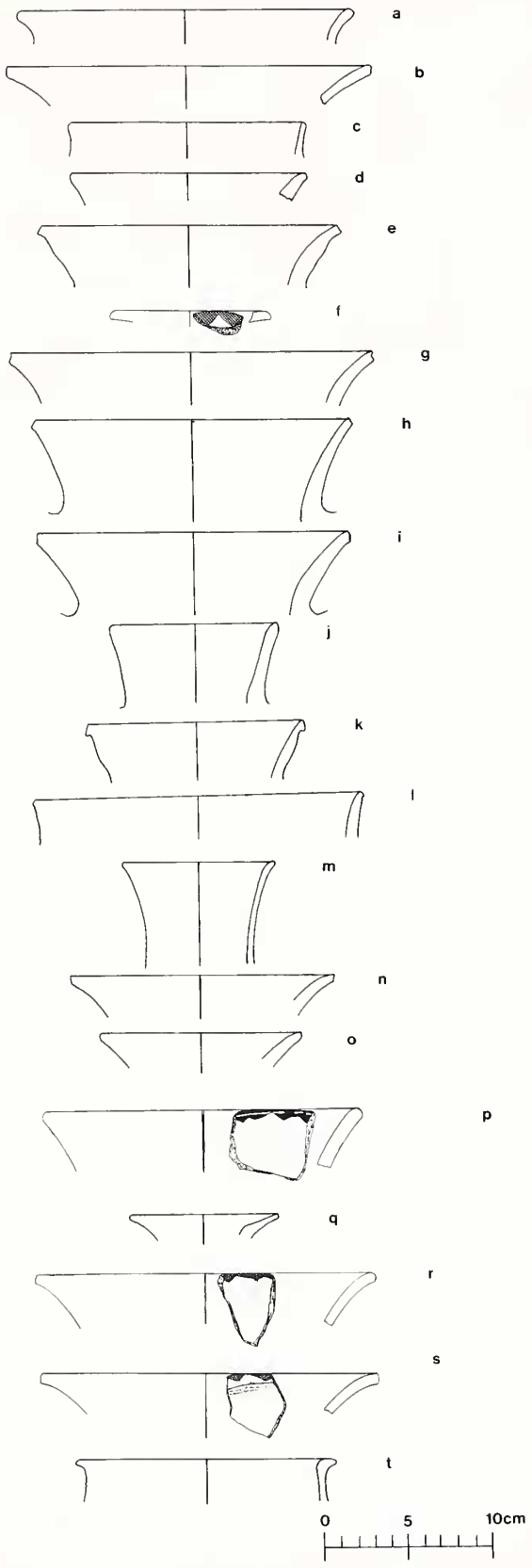
Because overall proportions of the Lo Demás wide-mouthed jars cannot be reconstructed, the use of the wide-mouthed vessels which produced the unsooted sherds is less clear than the case of the sooted sherds. Some probably were storage vessels; the wide mouths and throats of these vessels would facilitate access to the contents, an important characteristic for many dry goods which are not easily poured (Henrickson and McDonald, 1983:632; Costin, 1986:207–208; Rice, 1987:240–241).

One unsooted, wide-mouthed sherd from Sector I of Lo Demás has a labial flange (Fig. 22d) and another has a sharply everted rim (Fig. 22e), characteristics which are useful for tying covers over storage vessels (Henrickson and McDonald, 1983: 632; Costin, 1986:207–208; Rice, 1987:241). In their survey of the ethnographic literature, Henrickson and McDonald (1983:632) found that "almost all the long-term [dry storage] vessels have rolled-over or everted rims." Of the 22 wide-mouthed jar sherds from Huacarones (Sandweiss, 1989:Table 10), nine have a labial flange (Sandweiss, 1989:Fig. 34a–i) and four have a sharply everted lip (Sandweiss, 1989: Fig. 34j–m). Nineteen of the Huacarones sherds in this category are unsooted (including eight of the flanged sherds and three of those with sharply everted lips). Three are sooted, one (with labial flange) on the interior, one on the exterior, and one on both surfaces. The wide-mouthed jar sherds with labial flanges are the thickest rim sherds from either site.

Restricted jars. —This category includes all necked vessels with rim diameters between 25 and 8 cm (not inclusive). Inspection of the illustrations shows that this general classification subsumes a number of types, all of which have everted rims. Like the wide-mouthed jar sherds, the restricted jar sherds were distinguished from the angular rim bowl sherds by a longer (relative to width and diameter) and more vertical (less sharply everted) rim. The Lo Demás pottery assemblage includes 20 rim sherds in this category, 17 from Sector I and three from Sector IV (Fig. 23; Table 6). Six of the specimens are sooted and 14 are unsooted.

All of the sooted restricted jar sherds and most of the unsooted specimens were fired in an oxidizing atmosphere; paste color ranges from orange through red-orange to red-brown and tan. One unsooted example has a grey core, indicating incomplete oxidation, and another has grey paste, suggesting that it was fired in a reducing atmosphere. Three examples (two sooted, one unsooted) have an interior red slip, one (unsooted) has an exterior red slip, one (unsooted) has an exterior grey slip, and two (one sooted, one unsooted) have a red slip on both surfaces. Four sherds have a design in dark brown or black on the interior of the rim (Fig. 23f, p, r, s); Menzel (1976:117 ff; *see also* Menzel, 1966:92) refers to this design as the "Chincha Rim Scallop" (*see below,* sections on Bottles and Pottery Decoration). Temper in the restricted jars tends to be medium–coarse, although several examples have a medium–fine temper. The sherds decorated with the Chincha Rim Scallop comprise most of the medium–fine temper specimens.

Two of the sooted restricted jar sherds (Fig. 23h, i) and one of the unsooted sherds (Fig. 23j) have the corner point, and five others (two sooted, three unsooted) are broken close enough to the shoulder to confirm that they came from necked vessels with shoulders (i.e., jars) (Fig. 23a, c, e, k, q). Menzel (1966:92) found that in the Uhle Chincha collection,



two vessel categories "invariably" had the Chineha Rim Scallop design: complex rim bowls (a highly distinct form not found in the Lo Demás collection) and jars. Several jar neck sherds and one bottle neck collected from the quebrada adjacent to Sector IV of Lo Demás also had the Chincha Rim Scallop (Fig. 24), so it is reasonable to assume that the rim sherds with this design in the Lo Demás excavation sample also came from jars or bottles, depending on rim diameter.

Six of the restricted jar rims (Fig. 23e, g–k) are quite similar to the rims on ovoid jars (both high and squat types) discussed and illustrated by Menzel (Menzel, 1966:81–84 and Plates IX–XI). Ovoid jars are typical of Menzel's LIP 8/early LH Chincha style. One of the unsooted Lo Demás ovoid jarlike sherds has a marked labial flange (Fig. 23k); one unsooted (Fig. 23l) and two sooted sherds have weakly defined flanges (Fig. 23e, i). The reduced-fired sherd is highly everted (Fig. 23q). One unusual rim (Fig. 23t) has an everted lip.

The sooted sherds most likely come from vessels used for cooking. Rice (1987:241) states that a "restricted orifice . . . retards evaporation of the contents during prolonged heating," which suggests that the restricted jars were used to cook foods intended to maintain more of their water eontent than the foods cooked in angular rim bowls and wide-mouthed jars. The food cooked in the constricted bowls might have fallen somewhere in between that of the other two categories in terms of desired moisture content. The unsooted vessels could have been used for storage and/or serving, especially of pourable contents such as liquids and small grains. The relatively restricted orifice of these vessels would make them inconvenient for the storage of materials which required frequent, direct access. However, a restricted orifice also makes the opening easier to cover. In cooking, this attribute would further retard evaporation; for storage, covering provides additional protection to the contents at the cost of less convenient access.

The clearly defined labial flange occurs on an unsooted rim (Fig. 23k); flanges and everted rims may have aided in attaching a pliable cover to the jar

←

Fig. 23.—Restricted jar sherds from Lo Demás. Sector I: a–c (Stratigraphic Complex D), d–f (Complex C), g–q (Complex B); Sector IV: r–t. See text and Table 6 for further information. See Fig. 28 for color key.

(Henrickson and McDonald, 1983:632; Rice, 1987: 241). The fact that five of the six sooted sherds (Fig. 23b, e, h, i, t) in the restricted jar category are sufficiently everted to attach a cover provides another indication that pottery vessels at Lo Demás probably had multiple uses during their lifespan.

The Huacarones collection includes 17 sherds which fall into the restricted jar category on the basis of rim diameter and form (Sandweiss, 1989:Fig. 37, Table 10). Four are sooted and 13 are unsooted. One of the unsooted sherds is very thick and has a labial flange very similar to those on the Huacarones wide-mouthed jars (Sandweiss, 1989:Fig. 37b). Two thinner, unsooted sherds also have labial flanges, though of rather different shapes (Sandweiss, 1989: Fig. 37n, o). One of the sooted sherds has a flange-like thickening of the exterior of the lip (Sandweiss, 1989:Fig. 37p). Four sooted and two unsooted specimens have sharply everted lips (Sandweiss, 1989: Fig. 37c–f, j, l). One unsooted rim sherd has a variant of the Chincha Rim Scallop design feature (Sandweiss, 1989:Fig. 37e). Like the Lo Demás collection, the Huacarones restricted jar sherds suggest multiple uses for this vessel category, including cooking and storage.

Bottles.—This category covers all of the restricted neck vessels with rim diameters of 8 cm or less. Eleven sherds from Lo Demás fit this category, one from Sector IV and ten from Sector I (Fig. 25; Table 6). Only one bottle rim sherd is sooted. All examples have mildly to sharply everted rims, so the minimum orifice diameter is always less than the rim diameter.

All but one of the bottle rim sherds were fired in an oxidizing atmosphere. The exception is a sharply everted, 8 cm diameter, reduced-fired rim with grey paste and surface (Fig. 25g). The oxidized sherds have orange, red-orange, or tan paste. Temper tends to be medium–fine, though a few examples have medium–coarse temper and one has fine temper. One rim has an exterior red slip and one has an interior red slip; two sherds have a red slip on both surfaces. Two rims have the Chincha Rim Scallop design in dark brown on the interior of the rim (Fig. 25a, j); one of these sherds has a red slip on both surfaces. A complete bottle rim and neck from the surface of the quebrada adjacent to Sector IV of Lo Demás has the Chincha Rim Scallop (Fig. 24d).

Five of the bottle rim sherds have at least indications of the corner point (Fig. 25b, d, f, h, i), although none include part of the body. These sherds all indicate a fairly short neck, similar in this respect to the Chincha vessels classified as flasks by Menzel (1966:Plate XI–17, 18).

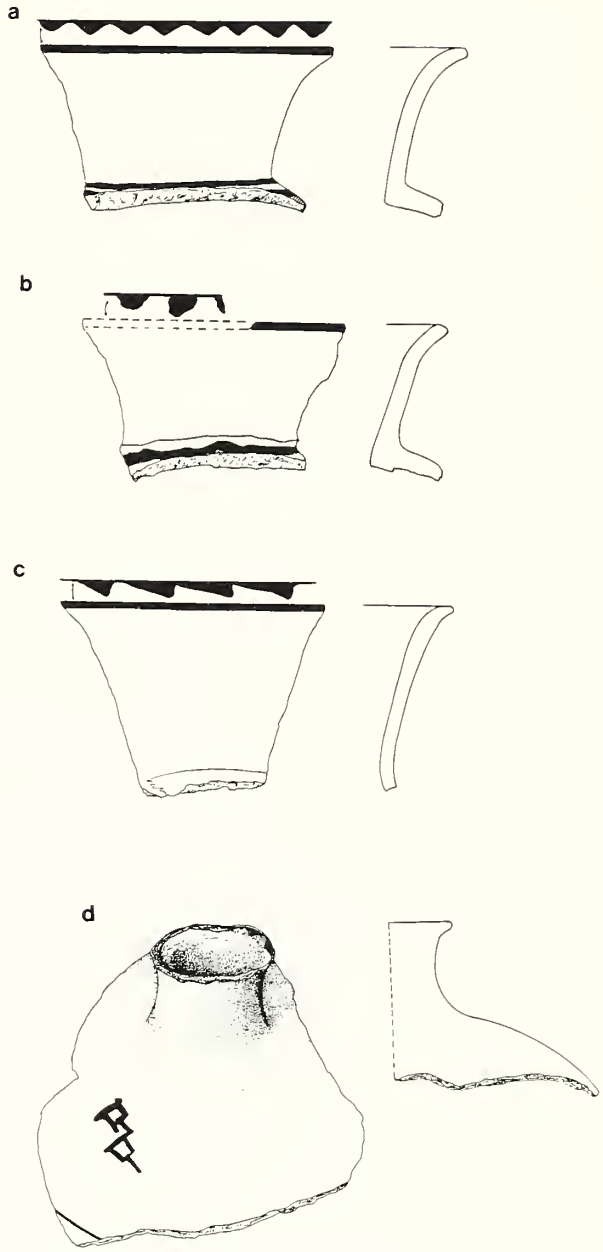


Fig. 24.—Sherds from the quebrada to east of Sector IV, Lo Demás. All are unsooted, are made of pure orange paste with medium–fine temper, and have an exterior red slip and black pendent triangles on the interior of the rim. Rim diameters are (from a to d): 13, 11, 14, and 5 cm.

In terms of use, the general lack of sooting and the very narrow orifice of the bottles indicates that they could only have been used to contain pourable contents, most probably liquid. Direct access to the

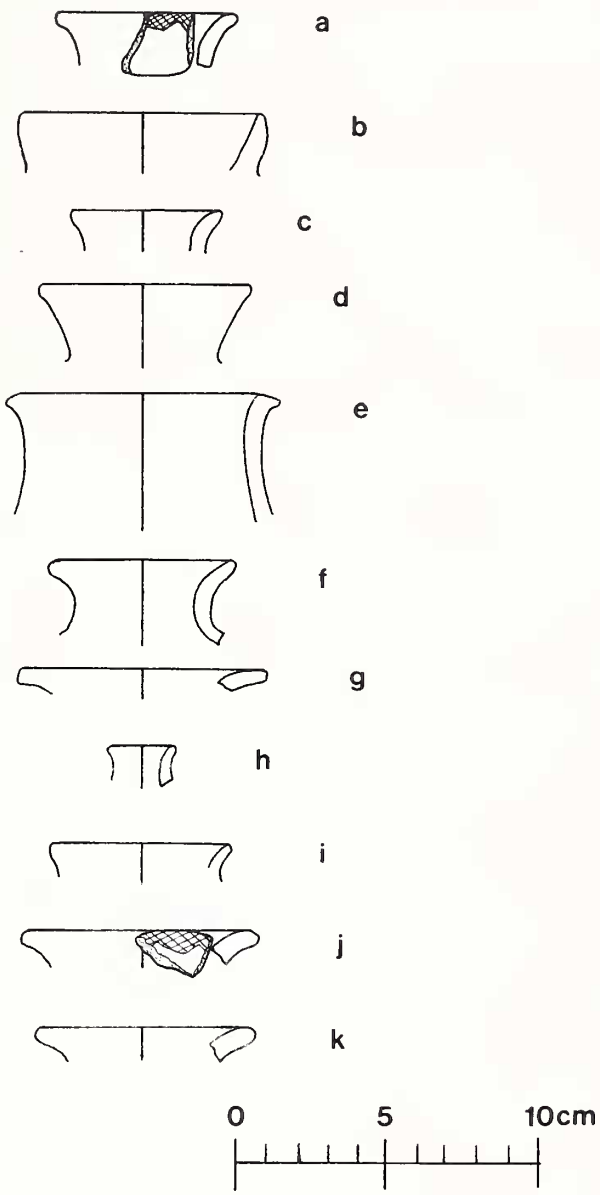


Fig. 25.—Bottle sherds from Lo Demás. Sector I: a (Stratigraphic Complex D), b–h (Complex C), i, j (Complex B); Sector IV: k. See text and Table 6 for further information. See Fig. 28 for color key.

contents was not possible. Whether they were used for long- or short-term storage (or both) is difficult to determine. Long-term liquid storage vessels tend to be larger than short-term ones (Henrickson and McDonald 1983:633). Although the overall dimensions and capacity of the Lo Demás bottles cannot be determined from the available sherds, the closest analogues in the Uhle collection (Menzel, 1966) are not very large,[58] and some of the Lo Demás bottle rim sherds are quite thin (4 to 8 mm). Both facts suggest that the Lo Demás bottles were small and therefore probably intended for short-term storage of liquids. The ease with which the small orifices of bottles can be stoppered, however, suggests that they *could* have been used to store liquids for a long time.

The Huacarones collection has only one sherd with the appropriate rim diameter to fit the bottle category (Sandweiss, 1989:Fig. 42a, Table 10). This sherd has a straight lip, a nubbin or lug about 1.5 cm below the lip, and a neck bulge beginning at the nubbin. This shape has no analogue in the Uhle Chincha or Ica collections (Kroeber and Strong, 1924; Menzel, 1966, 1976).

Open bowls.—This category is one of the most difficult to identify; most of the sherds assigned to it could be everted rims from necked or collared vessels. The identifying characteristics are a convex shape and no indication of a corner point; it is the latter characteristic which I used to distinguish open bowl sherds from angular rim bowl sherds. Rim diameter is necessarily the maximum diameter on such vessels. I have tentatively placed 12 sherds from Lo Demás in this category, ten from Sector I and two from Subunit 26D in Sector IV (Fig. 26; Table 6). Five sherds are sooted, including one from Sector IV.

Most sherds assigned to the open bowl category were fired in an oxidizing atmosphere, although one grey paste, unsooted specimen was fired in a reducing environment, and one grey-orange paste, unsooted sherd was incompletely oxidized. Paste color on the oxidized sherds is variable and includes orange, red-orange, red-brown, and tan. Three sherds have a red slip on the exterior, one on the interior, and one on both surfaces. One sherd has an exterior cream slip with a dark brown, painted, geometric design (Fig. 26h). Temper tends to be medium–coarse, with a few medium–fine temper examples.

Menzel illustrates only a few convex-sided bowls and dishes,[59] two from her LIP 8/early LH Chincha style (Menzel, 1966:Plate XII–33, 35) and two Inka/imitation Inka examples from her LH post-Chincha assemblage (Menzel, 1966:Plate XV–63; Plate XVI–79). The Lo Demás sherds do not resemble any of these examples, though the small size of the sherds limits comparison. Four of the Lo Demás specimens (Fig. 26a–c, k) exhibit some variation of a characteristic not seen on any of the Chincha pottery illustrated by Menzel (1966) or Kroeber and Strong (1924). Referred to by Cáceres M. (1984) as "borde semi-ampuloso," this feature consists of an undu-

lating outer profile below the lip. The inner profile is rarely affected and usually shows a smooth, convex curve. Two other sherds (Fig. 26d, i) have related forms in which the inner profile is also undulating.

The sooting on five open bowl sherds suggests that the vessels they represent were used for cooking. The unsooted specimens probably functioned as serving and/or eating vessels. Henrickson and McDonald (1983:632) describe the typical serving/eating vessel as having "the maximum diameter . . . equivalent to the rim diameter, resulting in open, 'unrestricted' bowls." Furthermore, the wide orifice and probably small volume of the Lo Demás open bowls would not be well suited for storage. Average rim diameter of serving/eating vessels varies according to whether the vessel is intended for an individual or a family (Henrickson and McDonald, 1983). The average rim diameter of the Lo Demás sherds is about 18 cm, midway between Henrickson and McDonald's figures for family and individual vessels.

The Huacarones collection includes 28 sherds assigned to the open bowl category, of which three have exterior soot and 25 are unsooted (Sandweiss, 1989:Fig. 40, Table 10). At least four of the unsooted specimens are sufficiently preserved to make their assignment to the open bowl category fairly secure; three of these sherds (Sandweiss, 1989:Fig. 40a–c) are from vessels which appear to be cumbrous bowls (Menzel, 1976:45–47, 1966:Plates 13–45). Although this vessel form is common in the LIP/LH Ica pottery tradition, the Uhle Chincha collection did not contain any examples (Menzel, 1966:102). One of the Lo Demás open bowl sherds also resembles a cumbrous bowl (Fig. 26f).

Eight of the Huacarones open bowl sherds (all unsooted) exhibit variations of the "semi-ampuloso" or undulating profile (Sandweiss, 1989:Fig. 40d–g, i–l). These sherds are thick, like their Lo Demás counterparts; however, the exact forms of the profiles in the Huacarones sample are visibly different from the Lo Demás rims. A principal difference is that both the inner and the outer profiles of the Huacarones bowls are inflected, while most of the Lo Demás sherds show this feature only on the exterior profile.

The three exterior-sooted Huacarones open bowl rims (Sandweiss, 1989:Fig. 40l–n) are also thick (average = 8.7 mm), as are the cumbrous bowl rims (average = 6.0 mm), the "semi-ampuloso" rims (average = 8.8 mm), and four other unsooted open bowl

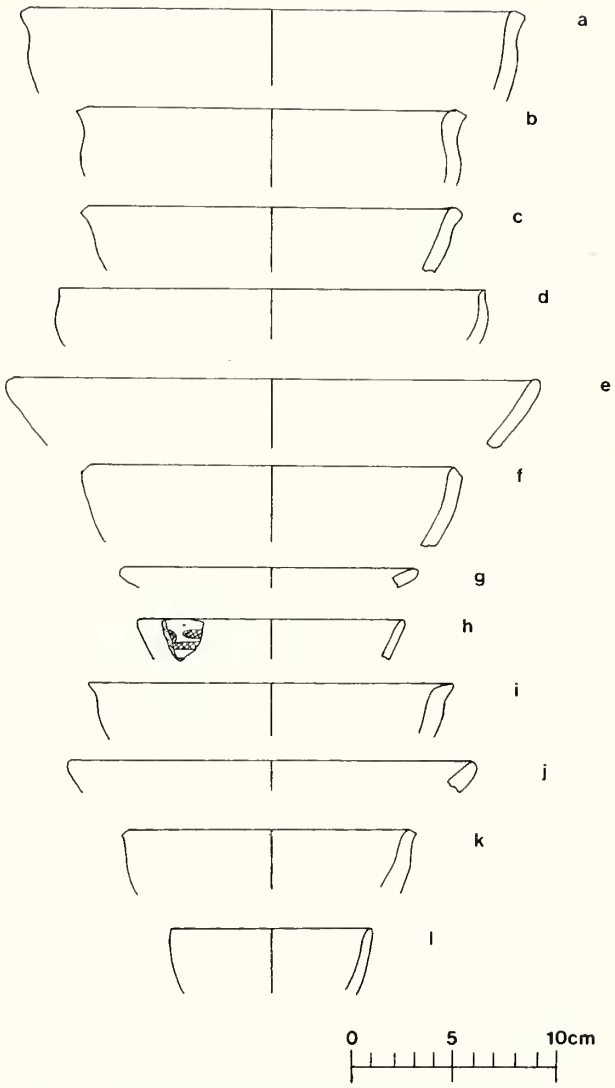


Fig. 26.—Open bowl sherds from Lo Demás. Sector I: a–g (Stratigraphic Complex D), h (Complex C), i, j (Complex B); Sector IV: k, l. See text and Table 6 for further information. See Fig. 28 for color key.

rims (average = 6.0 mm) (Sandweiss, 1989:Fig. 40o–q, bb). However, 11 of the unsooted Huacarones open bowl rims (average = 4.5 mm) (Sandweiss, 1989:Fig. 40r–aa) are noticeably thinner than the Lo Demás sooted or unsooted specimens (average = 7.0 mm and 6.3 mm, respectively). The thin walls of these Huacarones bowls are consistent with use for serving/eating; storage vessels generally require fairly thick walls for strength and durability, while light weight would be an advantage for a serving or eating vessel.

One of the thicker Huacarones open bowl rims

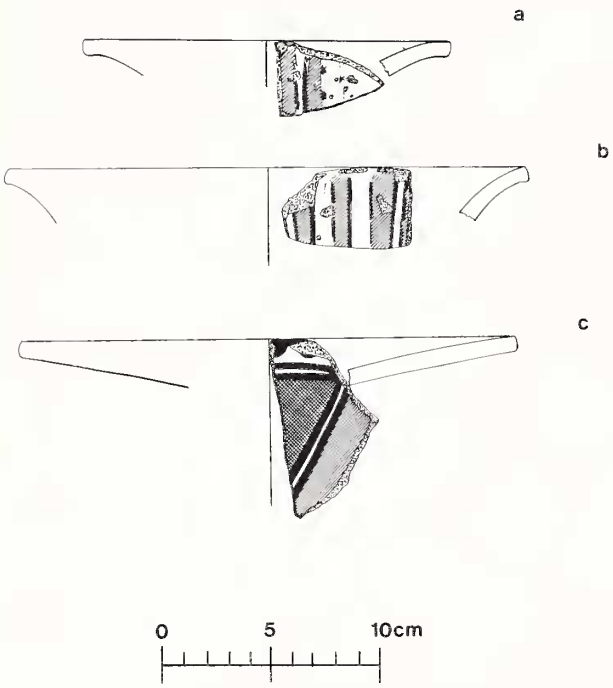


Fig. 27.—Plate/dish sherds from Lo Demás. Sector I: a, b (Stratigraphic Complex B), Sector IV: c. See text and Table 6 for further information. See Fig. 28 for color key.

(Sandweiss, 1989:Fig. 40bb) has a variant of the Chincha Rim Scallop design feature on the interior of the rim (Menzel, 1976:117 ff.) (*see* sections on Restricted Jars, Bottles, and Painted Decoration).

Plates/dishes.—Plates and dishes are open, shallow vessels with open (everted) sides (dishes are somewhat deeper than plates). The three fragments from Lo Demás assigned to this category (Fig. 27a–c; Table 6) are the only decorated rim sherds other than the six restricted jar and bottle specimens with the Chincha Rim Scallop and one open bowl fragment with a geometric design. None of the plate fragments is sooted.

Two plate sherds from Stratigraphic Complex B in Sector I are decorated on the interior with polychrome lines running perpendicular to the rim (Fig. 27a, b). One of these sherds appears to come from a very shallow vessel, while the other is deeper. The closest published analogue for this decoration is to LH Ica 9 pottery (*see below,* section on painted decoration).

The third plate sherd from Lo Demás was found in Subunit 26D in Sector IV (Fig. 27c); this rim comes from a shallow Inka (or imitation Inka) plate (B. Bauer, personal communication, 1988). Decoration is in white, black, light brown, and weak red (*see below,* section on painted pottery decoration). Temper is medium–fine, paste is red-orange, and the unpainted surface is orange.

Plates and dishes are most often used for serving and eating; their shape fits the criteria for this function outlined by Henrickson and McDonald (1983: 632) while offering little utility for storage. The presence of interior decoration on the Lo Demás sherds is a further indication that the vessels they represent were used for serving; as Rice (1987:240) explains, "because vessels for serving and eating are usually used in company, they may display fine surface finishing and elaborate decoration."

The Huacarones sample has two sherds which can be classified as plates or dishes (Sandweiss, 1989: Fig. 41d, e, Table 10). Both are unsooted, neither is decorated. One rim has a fairly smooth profile, while the other exhibits the "semi-ampuloso" or undulating profile seen on some of the Huacarones open bowls.

Summary of Vessel Forms by Stratigraphic Complex, Sector, and Site

Table 7 shows the distribution of vessel shape categories by stratigraphic complex in Sector I of Lo Demás, by sector (I vs. IV) at Lo Demás, and by site (Lo Demás versus Huacarones). In Sector I of Lo Demás, the majority of open bowls occurred in Complex D, while most of the wide-mouthed jars and most of the bottles were found in Complex C. Complex B contained the majority of the restricted jars. In each of these cases, the indicated shape category(ies) is/are the predominant vessel form within the complex. The other categories are fairly evenly distributed in the different complexes. In Subunit 26D in Sector IV, each shape category is represented by one to three examples. This sector and Sector I (taken as a total) have a similar distribution of shapes. Despite these apparent patterns, however, the small size of the sample for each complex and for Subunit 26D, in addition to the tentative nature of many sherd assignments, requires caution in using these results. Furthermore, the probable multiple uses of most shape categories suggest that the variations in proportion of categories may have little to do with the ways in which pottery was employed at Lo Demás. Each major stratigraphic complex (B to D) in Sector I, as well as Subunit 26D in Sector IV, has vessels which were or could have been used for storing, cooking, and serving/eating. These functional categories correspond to the three broader "realms" of domestic ceramic container use defined by Rice

Table 7.—*Distribution (counts/percents) of rim sherds by vessel shape category, Lo Demás and Huacarones. Shape categories: AR, angular rim bowls; CB, constricted bowls; WJ, wide-mouthed jars; RJ, restricted jars; Bt, bottles; OB, open bowls; PD, plates/dishes; U, unique shapes.*

	AR	CB	WJ	RJ	Bt	OB	PD	U	Total
				Lo Demás—Sector I					
Complex B	4/15.4	4/15.4	1/3.8	11/42.3	2/7.7	2/7.7	2/7.7	—	26
Complex C	4/16.7	4/16.7	5/20.8	3/12.5	7/29.2	1/4.2	—	—	24
Complex D	2/9.5	6/28.6	2/9.5	3/14.3	1/4.8	7/33.3	—	—	21
1 total	10/14.1	14/19.7	8/11.3	17/23.9	10/14.1	10/14.1	2/2.8	—	71
				Lo Demás—Sector IV					
26D total	3/25.0	1/8.3	1/8.3	3/25.0	1/8.3	2/16.7	1/8.3	—	12
				Lo Demás—Sectors I and IV combined					
Total	13/15.7	15/18.1	9/10.8	20/24.1	1/13.3	12/14.5	3/3.6	—	83
				Huacarones					
Total	22/20.4	14/13.0	22/20.4	17/15.7	1/0.9	28/25.9	2/1.9	2/1.9	108

(1987:208–209): storage, transformation or processing (cooking), and transfer or transport (serving and eating).

Comparison of the total Lo Demás sample of shape-assigned sherds with that from Huacarones (Table 7) reveals some interesting patterns, particularly concerning the shape categories for which use inferences are strongest. The primary cooking vessel from Lo Demás, the angular rim bowl, has a similar frequency at the two sites (15.7% at Lo Demás, 20.4% at Huacarones). The secondary Lo Demás cooking vessel shape, the constricted bowl, is more common at Lo Demás than at Huacarones, as are restricted jars, a form which seems to have served multiple purposes (*see* Table 7). The two assemblages differ most significantly in two shape categories: wide-mouthed jars and bottles. Wide-mouthed jars are about twice as common at Huacarones as at Lo Demás (20.4% vs. 10.8%); these vessels were almost certainly used for dry storage, particularly the Huacarones variant with labial flanges. The wide-mouthed jars are particularly suited for storing agricultural produce. In this context, it is important to recall that the unsooted wide-mouthed jar sherds—especially those with labial flanges—are the thickest rim sherds in the ceramic assemblages from either site.

In contrast, bottles account for over 10% of the Lo Demás shape-assigned rim sherds but are almost absent at Huacarones (Table 7). Bottles were probably used to hold liquid, possibly of greater importance in a non-agricultural settlement located away from irrigation canals and other sources of potable water than at a valley floor farming site such as Huacarones. Use of gourds for liquid containment might have been more common at the farming site, but the data from Lo Demás show that the fishermen had access to gourds and may even have grown them (*see* Chapters 8 and 10).

Chronology and Cultural Affiliation

The analysis of vessel forms from the Lo Demás ceramic assemblage offers limited information concerning chronology and affiliation. One angular rim bowl sherd (Fig. 20h) from the basal stratigraphic complex (B) in Sector I resembles a Late Horizon Ica 9 form which Menzel (1966) found in the Uhle Chincha collection. Angular rim bowls in general (Fig. 20) are found in "ordinary Late Horizon refuse sites in Ica" (Menzel, 1976:44), but they also seem related to a small cooking olla found in a Cemetery B Chincha grave in association with a possibly pre-LIP 8 bottle/jar (Menzel, 1966), and to a Late Intermediate Period form from Cerro Azul, in the neighboring Cañete valley (Marcus, 1987*b*). These associations suggest that this shape is a conservative, pre-Inka form which was in use for a long time.[60] A number of restricted jar necks are also similar to those on Menzel's (1966) LIP 8/early LH Chincha style ovoid jars (Fig. 23e, g–k); most of these sherds come from Complex B, the basal complex.

The decorated sherds from Lo Demás provide more information on chronology and cultural affiliation than do the undecorated rim sherds.

Decoration

Like shape-diagnostic sherds, decorated fragments from Lo Demás are too few and fragmentary

Table 8.—*Decorated body sherds from Lo Demâs illustrated in Figs. 29–32. Abbreviations: Fig., figure reference for this monograph; Cat., catalogue number (Sandweiss, 1989:Appendix B); SC, stratigraphic complex in Sector I; Su, Subunit; L/F, level or feature within excavation unit; b, beige; br, brown; cr, cream; dp, dark purple; g, grey; o, orange; r, red; s, slip; ext, exterior; int, interior; td, throat diameter. Sherds are unsooted unless otherwise noted; decoration is painted on the exterior unless otherwise noted.*

Fig.	Cat.	SC	Su	L/F	Paste	Surface	Other
				Sector 1			
29a	1578	B	3A	12	r-o	ext cr s	13 cm td
29b	1741	B	2C	19	r-o	ext r s	16 cm td
29c	1389	B	10B	23	g-o	o	
29d	1760	B	4B	20	o	ext cr s	
29e	1657	B	2A	14b	r-o	r-o	
29f	1855	B	4B	25	o	ext cr s	
29g	1324	B	10D	20i	g ext	ext r s	
29h	1324	B	10D	20i	g ext	ext r s	
29i	1391	B	10D	24	r-o	ext r s	
29j	1843	B	4B	11408	r-o	r-o	
29k	1193	B	1C	26W	r-o	r-o	
29l	1834	B	4B	23i	g ext	ext r s	
29m	1391	B	10D	24	r-o	ext r s	
29n	1850	B	4D	25	b	b	
29o	1909	B	C-1	13	r-o	ext r s	
29p	1278	B	3B	9	g core	br	
29q	1819	B	4D	22i	r-o	ext r s	
29r	1910	B	C-1	14	r-o	ext r s	
29s	1172	B	1C	22W	r-o	r-o	
29t	1669	B	2A	14ci	r-o	r-o	
29u	1844	B	4B	1149	r-o	ext dp s	
29v	1327	B	10D	1023	r-o	ext r s	
29w	1502	B	3B	10	br-b	b	int decoration
29x	1857	B	4D	11412	g	g	incised
30a	1684	C	2C	291	r-o	ext cr s	12 cm td
30b	1598	C	4D	465	r-o	r-o	
30c	52	C	A2	3bii	r-o	r-o	
30d	904	C	3D	6b	r-o	ext r s	
30e	412	C	1B	111	r-o	r-o	
30f	412	C	1B	111	r-o	r-o	
30g	52	C	A2	3bii	r-o	o	ext soot
30h	52	C	A2	3bii	r-o	o	ext soot
30i	52	C	A2	3bii	r-o	r-o	int soot
30j	1396	C	3A	336	r-o	r-o	
30k	957	C	3B	6c	o	ext r s	
30l	1428	C	2C	278	r-o	ext cr s	
30m	484	C	3A	311	g core	b	
30n	882	C	1A	16iW	r-o	ext r s	
31a	1085	D	4D	450	b	b	
31b	90	D	A3	f23	r-o	r-o	
31c	1134	D	4C	7c	r-o	r-o	
31d	1134	D	4C	7c	r-o	o	
31e	387	D	2D	3d	o	o	
31f	1134	D	4C	7c	r-o	r-o	
31g	31	D	B3	2a	r-o	r-o	
31h	19	D	A2	2d	g-o	g-o	
31i	783	D	4B	5	r-o	ext cr s	
31j	554	D	2C	2W	b	o	
31k	662	D	2C	3bW	r-br	r-br	
31l	1106	D	4C	7b	r-o	ext cr s	
31m	240	D	1A	1	r-o	r-o	
31n	554	D	2C	2W	b	o	
31o	295	D	2B	2	g	g	broken handle bases; modelled potato eye

Table 8.—*Continued.*

Fig.	Cat.	SC	Su	L/F	Paste	Surface	Other
31p	392	D	2D	202	g	g	modelled potato eye; oval protuberances
31q	299	D	1D	4E	g	g	lug w/incisions; int soot
31r	291	D	1D	2ibE	g	g	incised; int soot
				Sector IV			
32a	1858		26D	16	r-br	ext r s	8 cm td
32b	1841		26D	13	g core	g-o	9 cm td
32c	1800		26D	10	r-o	g	handle; sooted
32d	1851		26D	13b	r-o	r-o	
32e	1809		26D	12	r-o	r-o	
32f	1874		26D	17	r-o	ext r s	sherd worked into rough disk
32g	1717		26D	3	r-o	r-o	
32h	1745		26D	6b	b	ext r s	
32i	1681		26D	2	g core	ext cr s	
32j	1681		26D	2	r-o	ext r s	
32k	1853		26D	14b	o	ext cr s	
32l	1800		26D	10	r-o	ext cr s	
32m	1874		26D	17	r-o	r-o	
32n	1800		26D	10	r-o	r-o	ext soot
32o	1852		26D	13bi	r-o	ext cr s	
32p	1800		26D	10	r-o	r-o	incised; ext soot

to create a typology. Instead, diagnostic designs from the Lo Demás sherds are correlated with published ceramic decoration from Chincha and elsewhere.[61]

Lo Demás ceramics employ three decorative techniques. Most decorated sherds are painted; a few examples are modeled and/or incised. The following sections are organized by decorative technique. Table 8 lists attributes of the decorated body sherds, which are illustrated in Figs. 29–32. Decorated rim sherd attributes are listed in Table 6.

Painted decoration.—Menzel (1966:89–94) describes but does not illustrate decoration on the Uhle Chincha collection ceramics of her LIP 8/early LH Chincha style and makes passing reference to decoration on the pottery included in her post-Chincha assemblage (Menzel, 1966:109–118 *passim*, 118–119), but does refer to Kroeber and Strong's (1924) illustrations. Menzel's (1976) well-illustrated study of contemporary Ica decoration provides some comparative material, as do various other studies of late pre-Hispanic Peruvian pottery.

Painted designs from Lo Demás are exclusively geometric; a small number represent geometricized fish and the rest consist of abstract figures. Painting occurs exclusively on oxidized-fired vessels. Figures tend to be drawn in black or dark brown[62] on a paste-colored or cream-slipped background; white and red are often used to separate the dark lines and are occasionally used as background slips. Dark purple is used rarely in place of black or dark brown to form the figures.

Most painted fragments from Lo Demás are body sherds, so relating design to form is usually not possible. However, three categories of decorated sherds have characteristic associations between design and form: (1) rims with the Chincha Rim Scallop, (2) shoulder/neck fragments with outlining at the base of the neck, and (3) plates with a striped design on the interior. In addition, two unique sherds—a handle and an open bowl rim—link elements of painted decoration and form.

(1) The Chincha Rim Scallop. Menzel (1976:135) describes this design element as "a row of adjoining small solid black triangles on a white or unpigmented surface, pendent from the rim edge" (*see also* Menzel, 1966:92, 1976:117, 146). On the six Lo Demás examples (Table 6), at least, the lip is also painted solidly in the same color as the triangles. Five have dark brown paint for the design (Figs. 23f, r, s, 25a, j) and one uses black paint (Fig. 23p). Four of the sherds are rims classified as restricted jars and two as bottles (*see above*). Examples come from Stratigraphic Complexes B to D in Sector I and from Subunit 26D in Sector IV, indicating that this design feature was used throughout the late pre-Hispanic occupation of Lo Demás.

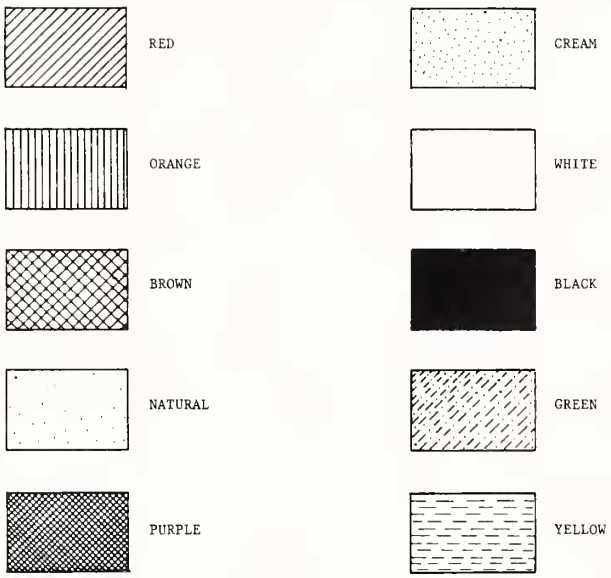


Fig. 28.—Color key for sherd drawings.

Menzel (1966:92) writes that for her LIP 8/early LH Chincha style, "jar necks are almost invariably decorated with" the Chincha Rim Scallop. This design element is not cited in the later LH post-Chincha assemblage pottery, and it is not present on pre-LIP 8 Chincha ceramics (D. Menzel, personal communication, 1987).

In Ica pottery, the Chincha Rim Scallop first appears on LIP 8 Ica 8 vessels, where it "must be the result of Chincha influence" (Menzel, 1976:117), and continues in use in LH Ica 9 pottery; but

> "Since most Chincha-associated features are eliminated in the Late Horizon, the survival of the Rim Scallop design requires special explanation. It probably owes its survival to the fact that it has a coincidental close analogue in the Cuzco Inca style, where rows of pendent black triangles are used for various purposes, including interior (upper) rim decoration" (Menzel, 1976:135).

However,

> "The Chincha Rim Scallop differs from the similar Inca rim in context, and also in execution, the triangles having a proportionately broader base with a less pointed tip, slightly arching sides and more irregular contours" (Menzel, 1976:146).

The examples of the Chincha Rim Scallop from Lo Demás fit the description for the Chincha (vs. Inka) variant best; however, this design is still best explained as an example of Inka influence on Chincha pottery (*see below*).

Two Chincha Rim Scallop sherds from Sector I of Lo Demás (Figs. 23p, 25j) were found in the same stratigraphic complex (B, the lowest) as a sherd bearing a Cuzco Inka Polychrome A design (Fig. 29c) (*see below* and Rowe, 1944:47 and Plate V); two other Rim Scallop sherds were found in later, overlying Complexes C (Fig. 23f) and D (Fig. 25a). In Subunit 26D in Sector IV, the two Chincha Rim Scallop sherds (Fig. 23r, s) were stratigraphically lower than the Inka plate fragment (Fig. 27c; *see below*). These data indicate that although the Chincha Rim Scallop *might* precede the Inka arrival in Chincha, it certainly continued in use during the Inka occupation (as Menzel [1976] shows for Ica). Therefore, the Chincha Rim Scallop could well be a design feature inspired by Inka ceramic decoration, *contra* Menzel. The fact that this design element does not appear in Chincha or Ica before LIP 8, as well as the presence of Late Horizon, Inka-related stylistic attributes on some figurine and anthropomorphically-modeled pottery fragments from Lo Demás (*see* Chapter 8) further support this hypothesis (*see below* and Chapter 11).

(2) Decorated Shoulder/Neck Fragments with the Corner Point Preserved but Lacking the Rim and Most of the Neck. Decoration on these sherds consists of neck outlining and is present on six fragments (Figs. 29a, b, 30a, b, 32a, b); a seventh probably broke just below the corner point (Fig. 31a). Throat diameter, where measurable, ranges from 8 to 16 cm, indicating that the vessels probably fall into the "restricted jar" shape category. Examples of decorated shoulder/neck sherds occur in Subunit 26D in Sector IV and in Stratigraphic Complexes B and C in Sector I. The seventh, probable example comes from Stratigraphic Complex D; thus, this design feature seems constant throughout the late pre-Hispanic occupation of Lo Demás. Two of the restricted jar neck sherds with the Chincha Rim Scallop found in the quebrada adjacent to Sector IV of Lo Demás also have neck outlining (Fig. 24a, b).

All but one of the decorated shoulder/neek sherds have a red or cream slip and two or three narrow, black or dark brown lines circling the shoulder of the vessel at and/or just below the corner point. The exception has a broader cream band around the top of the shoulder, joined by a diagonal cream band which strikes across the shoulder (Fig. 32b). The cream design is painted over a brown slip.

Menzel's (1966:91–92) description of the following Chincha style design feature is relevant to the decorated shoulder/neck fragments from Lo Demás (except the cream band sherd):

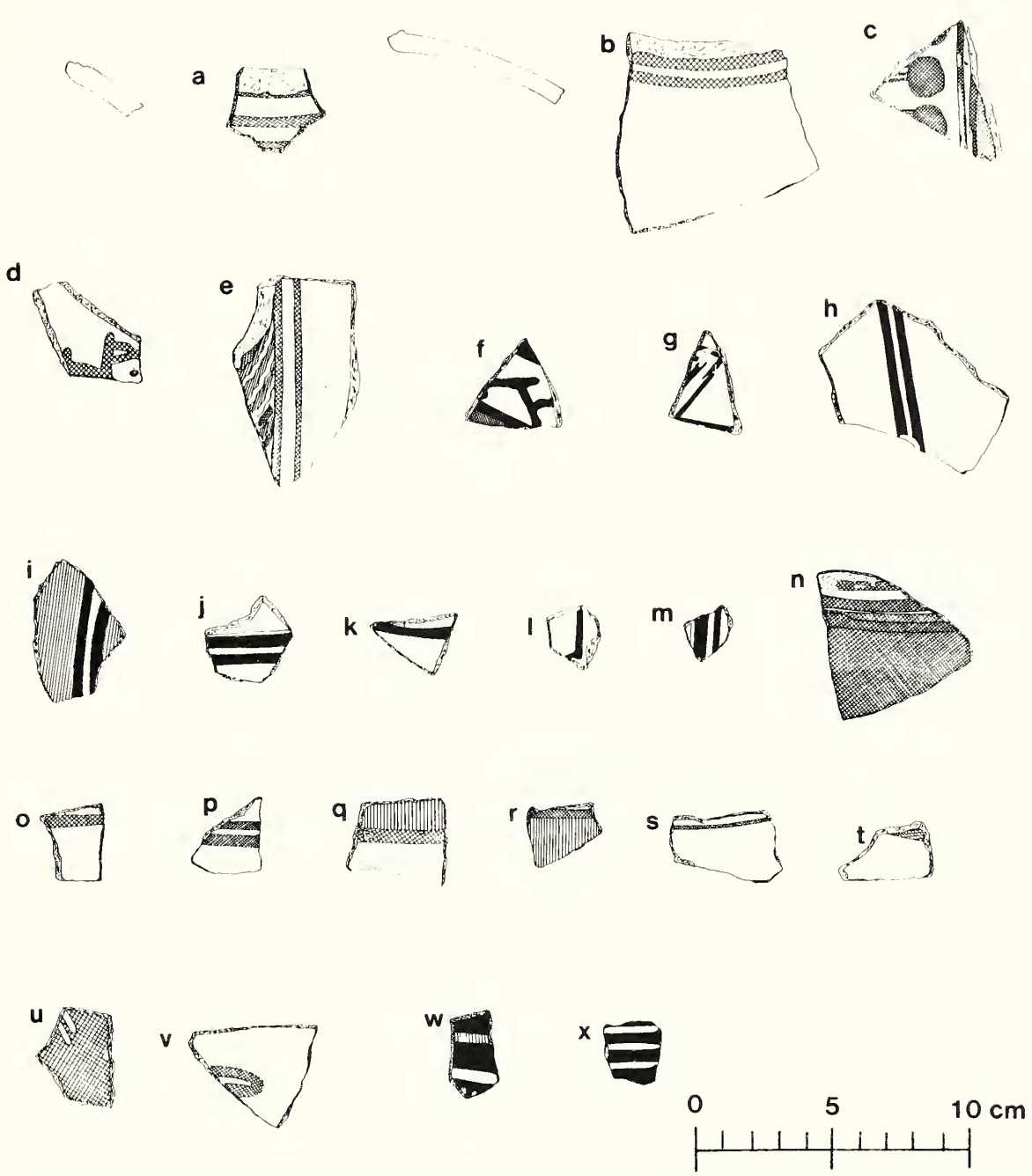


Fig. 29.—Decorated body sherds from Lo Demás, Sector I, Stratigraphic Complex B. See text and Table 8 for further information. See Fig. 28 for color key.

> "The design area is located on the upper exterior part of the body. . . . The design area may or may not be delimited at the bottom by an outline which is placed at or above the shoulder of the vessel. Outlining consists of a single black line, two or three black lines, or a purple or red band outlined in black."

Menzel does not indicate whether this kind of outlining is used to delimit the *top* of the design area, although such appears to be the case on a number of the Chincha vessels illustrated by Kroeber and Strong (1924:Plates 11a–d, 12a, b). Two of these vessels (Kroeber and Strong, 1924:Plate 12a, b) are jars identified as Chincha Ica by Menzel (1966:93 and Appendix A) on the basis of their decoration. The other four vessels are complex rim bowls, three

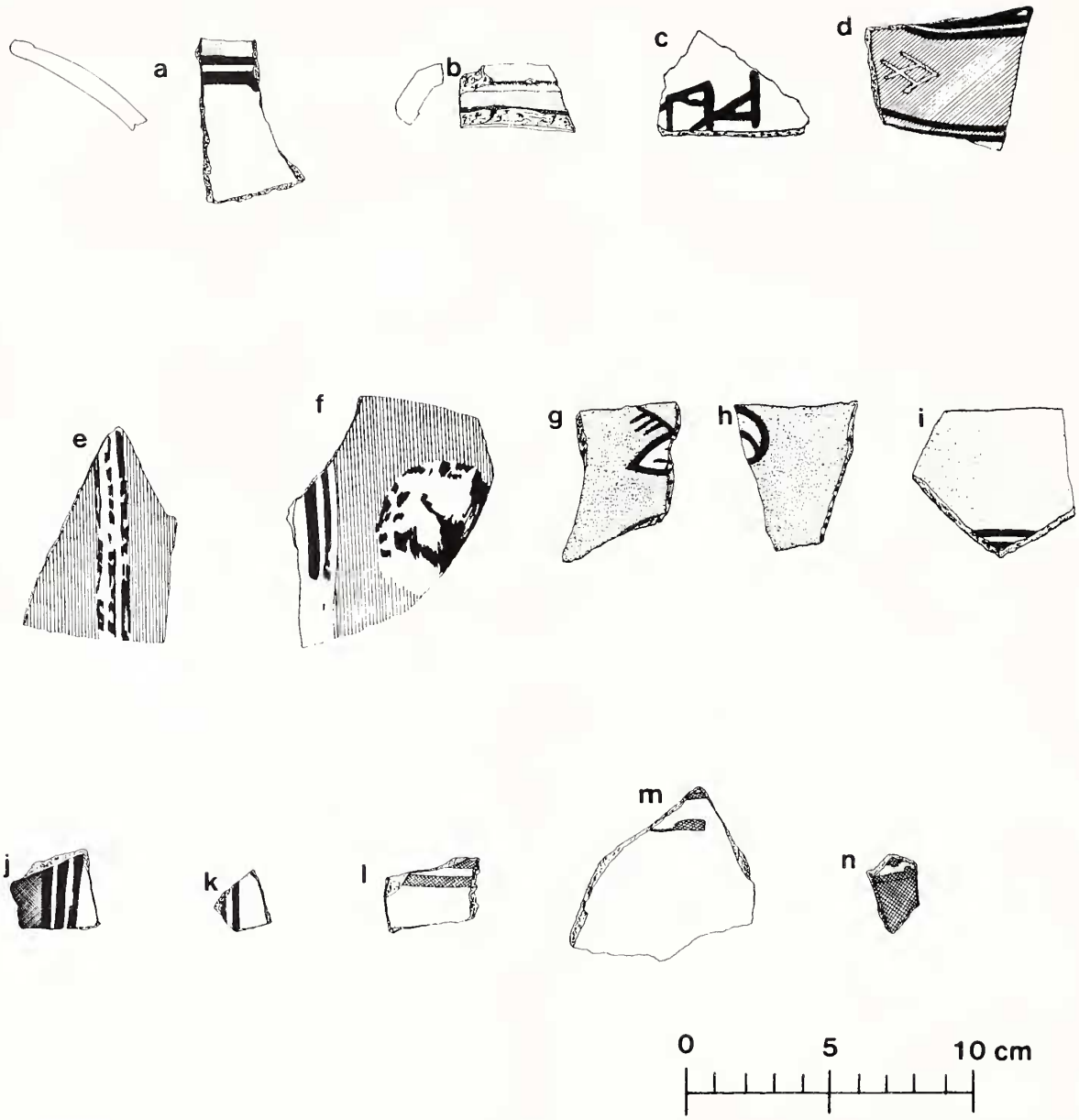


Fig. 30.—Decorated body sherds from Lo Demás, Sector I, Stratigraphic Complex C. See text and Table 8 for further information. See Fig. 28 for color key.

with Chincha Ica decoration (Kroeber and Strong, 1924:Plate 11a, b, d; Menzel, 1966:93 and Appendix A) and one with Chincha decoration (Kroeber and Strong, 1924:Plate 11c; Menzel, 1966:92 and Appendix A). Based on the shoulder angle, the jars provide a closer analogue for the Lo Demás shoulder/neck sherds than do the complex rim bowls.

Menzel (1966:92–93 and Appendix A) assigns the two jars and the four bowls to her LIP 8/early LH Chincha style chronological unit. However, she does not provide sufficient information to determine whether or not shoulder/neck outlining also occurs on post-Chincha assemblage pottery. In Ica, the apparent source for this decorative technique, a review of the photos published by Menzel (1976) shows that shoulder/neck outlining occurs on vessels assigned to the Late Horizon and the early Colonial Period.

(3) Interior-decorated Plate Sherds (Fig. 27a, b). Two sherds come from Stratigraphic Complex B, the lowest complex in Sector I. Decoration consists of painted red and white stripes with black outlines running perpendicular to the rim on the interior of the vessel; the exterior is not painted.

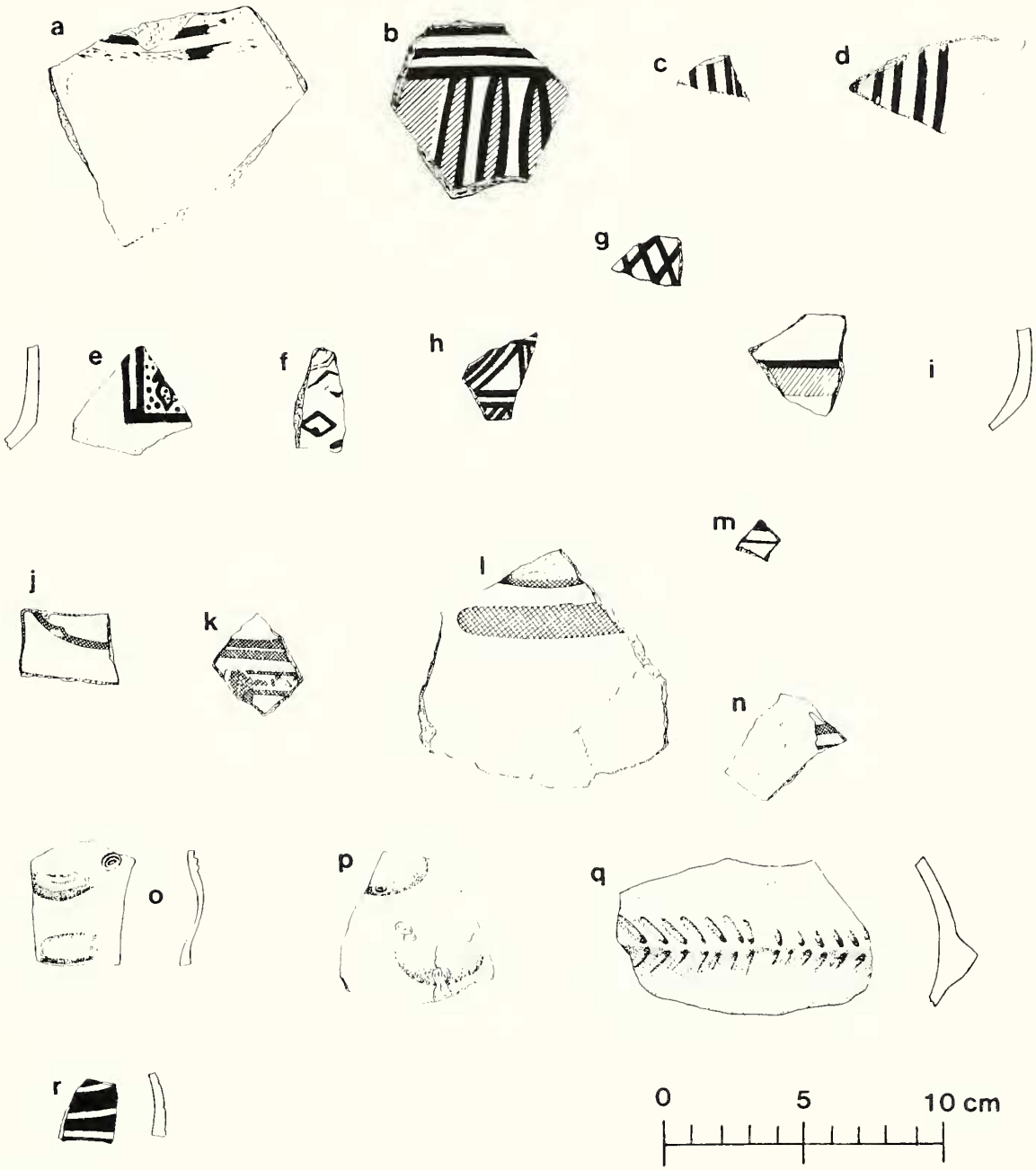


Fig. 31.—Decorated body sherds from Lo Demás, Sector I, Stratigraphic Complex D. See text and Table 8 for further information. See Fig. 28 for color key.

The red/white/black outline stripe design is noted by Menzel (1976:106, 144–145) for LIP Ica 6 and LH Ica 9, but not mentioned for Chincha (Menzel, 1966). On one Ica 9, Late Horizon "flaring cup" (Menzel, 1976:Plate 53–48), both horizontal and vertical variants of this stripe pattern are among several designs which alternate around the interior of the rim. The shape of the deeper Lo Demás striped rim (Fig. 27b) could be interpreted as part of a flaring cup rather than as a dish.

Three body sherds from Stratigraphic Complex D in Sector I of Lo Demás have a red/white/black outline design similar to that on the two plate rims (Fig. 31b–d). Unfortunately, the position of these fragments on the original vessels cannot be determined.

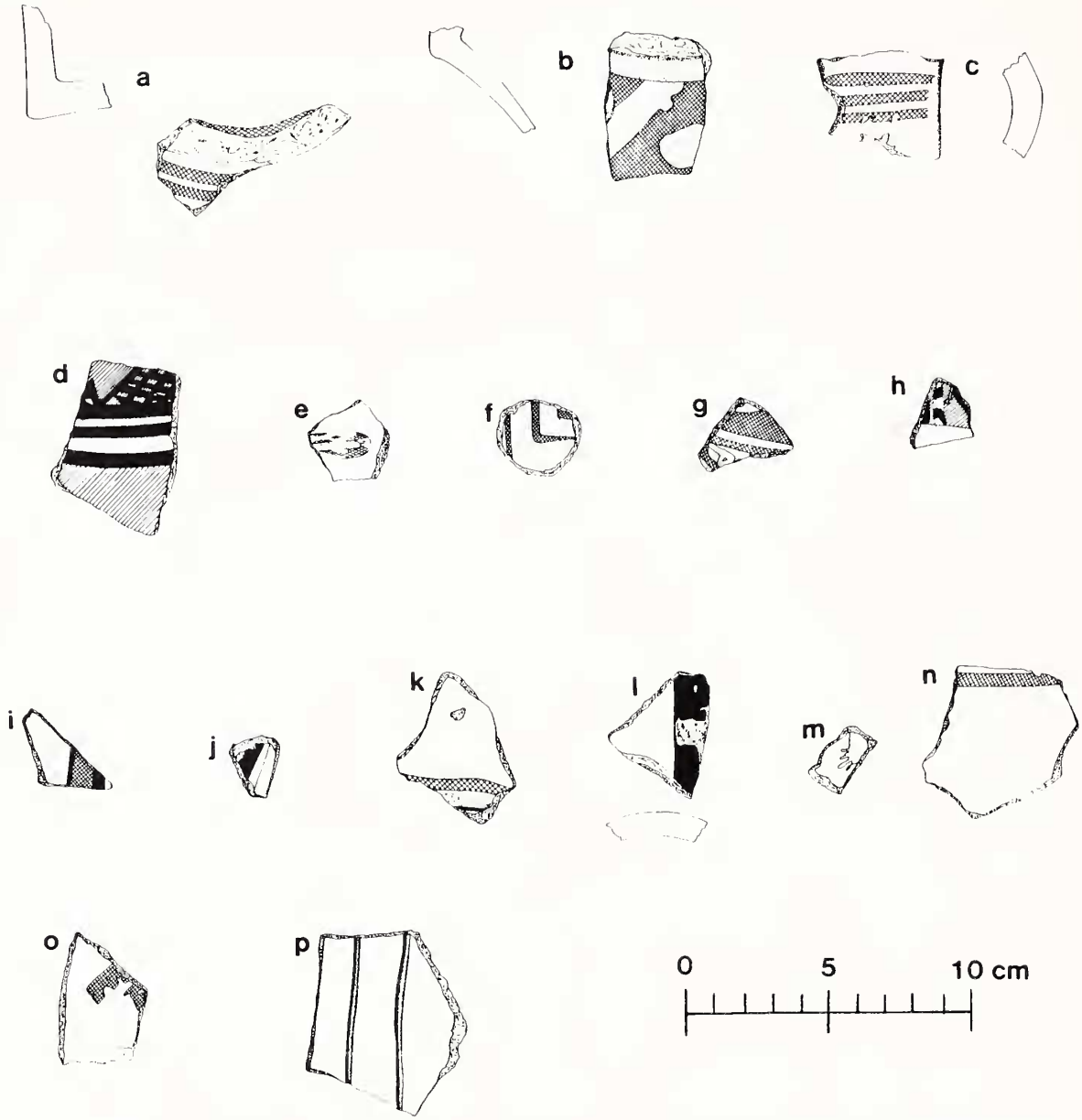


Fig. 32.—Decorated body sherds from Lo Demás, Sector IV, Subunit 26D. See text and Table 8 for further information. See Fig. 28 for color key.

The Lo Demás ceramic assemblage from Subunit 26D in Sector IV includes one strap handle fragment with a painted design consisting of three dark brown stripes running from edge to edge of the handle (Fig. 32c). The paste is red-orange, tending toward grey on the surface, which is sooted. Concerning LIP 8/early LH Chincha style decoration, Menzel (1966: 92) writes that

> "handles are decorated with cross striping. The cross striping consists of the same designs as the basal outlining of the design areas."

Although Menzel does not mention striped handles on vessels in the post-Chincha assemblage, one of the post-Chincha pots illustrated by Kroeber and Strong (1924:23, Fig. 9d) has a cross-striped strap handle. Menzel (1966:113) classifies this fruit-shaped vessel as a Late Horizon, central to north coast specimen. Strap handles, sometimes decorated with cross-striping, are a characteristic design feature of Inka pottery; this feature was employed in Ica in the Late Horizon Ica Inka style (Menzel, 1976:136, 156).

Stratigraphic Complex C in Sector I of Lo Demás

provided a open bowl rim (Fig. 26h) with dark brown, linear elements painted over a cream slip on the exterior of the vessel. The preserved design on this sherd is too fragmentary and simple to allow cross-correlation with other designs. However, cream slips are one of the characteristic design features of Menzel's (1966:91) Chincha style.

In addition to the painted sherds that preserve the relation of design to form, the Lo Demás ceramic assemblage includes a number of painted fragments which show some similarity to Chincha, Ica, and Inka designs.

Two sherds have clear Inka decoration, though it is less obvious whether they represent imported Cuzco pottery or local imitations. The first is a body sherd with Cuzco Polychrome A decoration (Rowe, 1944:47 and Plate V) in dark brown on an unslipped, orange surface (Fig. 29c). The paste is a grey-orange color. One of the design elements of Cuzco Polychrome A is the "fern" pattern, which consists of balls attached by two or three lateral stems to central stems. The Lo Demás sherd preserves one whole and two partial balls; the whole ball has three lateral stems. Sherds exhibiting the fern pattern are reported from almost every published provincial Inka site (e.g., Julien, 1983:Plate 25; Morris and Thompson, 1985:75, Fig. 9).[63]

The other Inka sherd is a rim fragment of a plate found in Subunit 26D in Sector IV (Fig. 27c; *see above,* section on plates/dishes). Decoration consists of an interior design of black and white lines separating areas of brown and weak red and a black rim scallop on a white base; the rim scallop is reminiscent of Menzel's (1976:135, 146) Chincha variant rather more than her Inka variant. The colors are brighter and the outlines sharper than on most of the decorated sherds from Lo Demás. Brian Bauer (personal communication, 1988) has identified this sherd as part of an Inka plate, based on his research in the Cuzco area.

Geometric fish occur on two sherds in Stratigraphic Complex C in Sector I, and on one sherd in Complex B. The Complex B fish (Fig. 29d) is the same type as one of the Complex C fish (Fig. 30c); the former is in dark brown on a cream surface, whereas the latter is black on orange paste. Bird figures but not fish are listed as an element of Chincha style decoration (Menzel, 1966:92). Geometric fish do appear on two Chincha vessels illustrated by Kroeber and Strong (1924:Fig. 6a, b), but they are not the same fish as either of the two Lo Demás types.[64] Rather, the Lo Demás fish are identieal to the Late Horizon, Ica–Inka rectangle fish (Menzel, 1976:164 and Plate 36–493). A bottle sherd from the Sector IV quebrada surface collection (Fig. 24d) has a very similar fish and the Chincha Rim Scallop.

The second type of geometricized fish occurs on one fragment from Stratigraphic Complex C in Sector I (Fig. 30d). This fish is executed in cream on a red-slipped background; the design field is set off by black lines over the red slip on one side and over cream on the other. These lines fit Menzel's (1966: 91–92) description of Chincha style design area outlining, as cited above. Although fish of this form are not seen on published illustrations of vessels from Ica (Menzel, 1976) or Chincha (Kroeber and Strong, 1924), the Lo Demás fish is closely similar to fish on a warp-patterned camelid fiber belt from Uhle's (1924) Cemetery E, Grave 3 (*see* Garaventa, 1979: 220, 225, Figs. 8, 231); except that the former lacks the central dot eye of the textile fish. The form of this design is constrained by the technical limitations of the textile medium (unlike the painted rectangle fish), so it probably originated as a textile design (M. Young, personal communication, 1988). Menzel (1966) places Grave E–3 in her LIP 8/early LH Chincha style. Based on the presence of several silver goblets and an analogy to an Ica grave, Garaventa (1979:224) suggests that Grave E–3 may date to the early LH part of the Chincha style.

Two sherds from Stratigraphic Complex D in Sector I of Lo Demás somewhat resemble early Colonial Period Ica 10 designs. The first is done in black on an even cream slip; the design consists of part of a box containing black dots and a curvilinear figure (Fig. 31e). This design is very similar to one on an Ica 10 fragment from refuse (Menzel, 1976:Plate 43–597). The second example is an orange paste, unslipped sherd with small diamonds painted in fugitive black (Fig. 31f), which resembles Menzel's Ica 10 (early Colonial Period) small diamond element (Menzel, 1976:Plates 40–565, 567, 570, 574 left).

Another sherd from Complex D (Fig. 31g) has part of a black on red-orange paste cross-hatched design somewhat similar to Late Horizon, Inka-associated designs from Ica (Menzel, 1976:Plates 34–448, 457). A fourth sherd from Complex D (Fig. 31h) vaguely resembles a design feature found on "Canchón" pottery from Cuzco (Rowe, 1944:Figs. 19–13, 17, 18) comprised of triangles formed by multiple black lines.

A Complex B sherd with a red, white, and dark brown on cream design (Fig. 29e) strongly resembles a Chincha Iea style design from Uhle's Cemetery E

in Chincha (Kroeber and Strong, 1924:Plate 11a; Menzel, 1966:93 and Appendix A). The Cemetery E vessel is a cambered-rim bowl assigned (Menzel, 1966:86–87) to the LIP 8/early LH Chincha style chronological unit. The design on the Lo Demás sherd consists of red, dark brown, and white wavy lines set diagonally to two dark brown lines on a cream background.

A sherd from Subunit 26D in Sector IV of Lo Demás (Fig. 32d) is similar to a Provincial Inka plate design from the Ica valley (Menzel, 1976:51–39). The Lo Demás fragment has black triangles with interior cross-hatching over a red slip; the base of the triangle rests on the first of three black lines separated by cream bands. On the opposite side of the black/cream bands is a red or light brown field. In the Provincial Inka design, the triangles are not joined, there are only two black bands, and the background color is different. A variety of other designs from Ica have cross-hatched triangles; all date to the Late Horizon (Menzel, 1976:Plates 34–442, 460, 461, 35–469).

The Lo Demás ceramic assemblage contains a number of other painted sherds (Figs. 29f–w, 30e–n, 31i–n, 32e–o). Most bear a generic relationship to Chincha style decoration (Menzel, 1966), but none have a striking resemblance to any published specimens.

Modeled decoration.—Some sherds from Lo Demás have modeled decoration which seems related to various published late pre-Hispanic coastal styles. Most conspicuous are several fragments with anthropomorphic features; these specimens, which are very similar to Late Horizon pieces from Pachacamac, are discussed in Chapter 8 in conjunction with the ceramic figurines. Three other sherds, all from Stratigraphic Complex D in Sector I, are discussed here.

Two blackware sherds from approximately equivalent proveniences in Subunits 2B and 2D appear to be part of a vessel representing a tuber (Fig. 31o, p). One of the sherds has the base for a strap handle (Fig. 31o); both are relatively thin, with irregular profiles composed of molded bumps which imitate the surface of a tuber. Each sherd has a circular appliqué feature resembling a potato eye. Fruit and tuber vessels are relatively common in the Uhle Chincha collection. Menzel (1966:113–115) considers these pots as representatives of central to north coast, Late Horizon styles and assigns them to her post-Chincha assemblage. One illustrated vessel (Menzel, 1966:114 and Plate XVI–73) represents a potato through a series of bumps like those on the Lo Demás sherds. This pot and all of the other fruit and tuber vessels in the Uhle collection are oxidized-fired, but a nearly identical potato pot from Pachacamac is made of smoked blackware like the Lo Demás example (Menzel, 1966:114).

Another blackware sherd from Complex D has a long, raised lug with symmetrical, angled incisions along both sides of the crest (Fig. 31q). The Uhle collection from Chincha contains two blackware vessels with appliqué maize ear lugs which Menzel (1966:97 and Plates XI–24, XII–31) assigns to her LIP 8/early LH Chincha style. However, the resemblance between these lugs and the Lo Demás sherd is slight.

Incised decoration.—In addition to the possible maize ear lug discussed in the preceding paragraph, the Lo Demás ceramic assemblage contains three other incised body sherds, three of blackware and one of oxidized-fired, red-orange paste, and an incised blackware handle fragment. The blackware body sherds, from Stratigraphic Complexes B and D in Sector I, consist simply of small fragments with parallel incised lines (Figs. 29x, 31r). Although blackware vessels compose nearly half of the vessels in the Uhle collection assigned by Menzel (1966:89) to her Chincha style, apparently none of these vessels is incised except for the details on the maize ear lugs and on the handles of one bottle. In contrast, blackware vessels in a number of styles assigned to the post-Chincha assemblage do have incised decoration (e.g., an imitation Ica 9 pot, Menzel, 1966:116; four Chincha Inca bowls, Menzel, 1966:117, Kroeber and Strong, 1924:Plate 13a–c; a Pachacamac Inka bottle, Menzel, 1966:112, Kroeber and Strong, 1924:13, Fig. 3b).[65]

The blackware handle from Stratigraphic Complex D in Subunit A1 is solid, tubular (18 mm diameter), and curved. The incisions run diagonally to the long axis of the handle. This sherd strongly resembles the vertical fillet handle on a Pachacamac Inka blackware bottle from Uhle's Site E (Menzel, 1966:112 and Plate XV–64; Kroeber and Strong, 1924:13, Fig. 3b), and has a lesser resemblance to handles on a Chincha style blackware bottle from Uhle's Site C (Menzel, 1966:Plate XI–21). Concerning the Pachacamac Inka vessel, Menzel (1966:112) writes that "the use of the fillet is a coastal modification" to an Inka shape, Rowe's (1944:48, Fig. 8d) Shape D, which has strap handles instead of the tubular fillet handles. Also, the coastal bottles have appliqué neck bands (often incised as on the

Uhle bottle), "an original coastal feature found on late period vessels from Pachacamac to the north coast" (Menzel, 1966:112).

The incisions on the oxidized-fired sherd from Subunit 26D in Sector IV (Fig. 32p) are also parallel. Menzel (1966) does not mention any incised oxidized vessels in the Uhle collection.

Conclusions: Chronology and Cultural Affiliation from Decorated Ceramics

The decorated sherds from Lo Demás provide somewhat more information concerning chronology and cultural affiliation than do the rim sherds. The clearest indicators are the sherds in the Inka style found both in the lowest stratigraphic complex in Sector I (Fig. 29c) and in level 26–5 in Subunit 26D, Sector IV (Fig. 27c). Another sherd, from level 26–13b in Subunit 26D, also appears to bear an Inka design.

In addition to the Inka Polychrome A sherd, Complex B in Sector I has sherds which seem related to Late Horizon styles from Ica, to the south (Figs. 27a, b, 29d), and Pachacamac, to the north (Fig. 36), and to an LIP 8/early LH Ica style (Menzel's [1966:102–105] Chincha Ica variant of her Chincha style). Complex C also has probable Chincha Ica pottery (Fig. 30a, b), along with a Late Horizon Ica–Inka design (Fig. 30c) and an early Late Horizon Chincha design (Fig. 30d). Complex D contains sherds related to several Late Horizon styles: Ica Inka (Fig. 31g), Cuzco Inka (?) (Fig. 31h), and Pachacamac Inka (Figs. 31o, p, 36). Two sherds from Complex D seem most closely related to Menzel's (1976) early Colonial Ica 10 style (Fig. 31e, f).

In Sector IV, level 26–16 of Subunit 26D (near the bottom of the excavation) had one sherd with shoulder/neck outlining, possibly a Chincha Ica feature (Fig. 32a). Level 26–13b contained a sherd with decoration resembling a Provincial Inka plate from Ica (Fig. 32d). A striped strap handle from level 26–10 probably represents a Chincha style feature, although there are also Late Horizon, Ica Inka variants of this design. Finally, the Inka plate fragment came from level 26–5.

All three major complexes in Sector I, as well as Subunit 26D in Sector IV, contained sherds with the Chincha Rim Scallop design (Figs. 23f, p, r, s, 25a, j). Menzel (1966, 1976) considers this design to be a purely Chincha element uninfluenced by similar pendent triangles in the Inka pottery tradition. However, the Chincha Rim Scallop is one of the few designs which survive from LIP 8 Ica 8 into LH Ica 9 in the Ica valley (Menzel, 1976), and the stratigraphic distribution of this feature in Lo Demás suggests that it could well be the result of Inka influence in the Late Horizon (especially considering that it does not appear on pre-LIP 8, pre-Chincha style ceramics).

The decorated ceramics from Lo Demás are eclectic, but they point quite clearly to the co-existence of features which Menzel (1966:79) considers to belong to two chronologically distinct units: the LIP 8/early LH Chincha style and the later LH post-Chincha assemblage.

Menzel (1966:97) writes that "the Chincha style cannot have persisted very long in the Late Horizon, and must be confined to its beginning years" (*see also* Menzel, 1967:23; Menzel and Rowe, 1966:64–65 and Plate VIII). Although it is probable that at least some of the Chincha design elements do antedate the Inka conquest of the Chincha valley, the stratigraphic evidence from Lo Demás makes it equally clear that the Chincha style did not terminate with—or probably at any time during—the Inka governance of the valley. Based on his work at La Centinela and other Chincha sites, C. Morris (personal communication cited by Netherly, 1988*a*:112) also believes that the Chincha style continued in use throughout the Late Horizon. The fact that many of the burials excavated by Uhle contained only items datable to the Late Horizon and did not contain Chincha style items can now be explained more parsimoniously by social, political, or occupational differences. Menzel (1966:121) proposes this explanation for the heterogeneous collection of pottery in her post-Chincha assemblage unit of association; the Lo Demás evidence indicates that Menzel's Chincha style unit of association should be covered by the same hypothesis. This solution explains the presence of occasional Late Horizon elements in burials classified by Menzel as Chincha style, as well as the presence of some Chincha elements (e.g., a Chincha style figurine, Menzel, 1967:23) in post-Chincha burials.

One consequence of this reinterpretation of the late pre-Hispanic Chincha pottery sequence is that the presence of Chincha style pottery does not necessarily indicate a pre-Inka date. A second consequence is that the Ica 9 style no longer needs to appear in Chincha earlier than in Ica, as Menzel (1966:96) suggests.

The chronology and cultural affiliations of Lo Demás are considered further in Chapters 8 and 11.

CHAPTER 8

ARTIFACTS OTHER THAN CERAMIC VESSELS

This chapter treats all of the artifact categories from Lo Demás except pottery vessels, which were discussed in Chapter 7. Artifacts are defined here as items manufactured or deliberately modified by the prehistoric inhabitants of the site. Categories covered in the following sections are: figurines; metal objects; wooden objects; worked gourd; nets; textiles; spinning and sewing equipment (spindle whorls, needles, and spindles); sandal; "half-bobbin" objects; lithics; and bone and shell objects. Unless otherwise noted, the samples discussed for each artifact category consist of all specimens from all excavations in Sector I[66] and from Subunit 26D in Sector IV. These artifacts help determine the activities carried out at Lo Demás and the chronology and cultural affinities of the site.

Figurines

Figurines, or modeled representations of the human figure, occur in Peruvian archaeological sites spanning thousands of years of prehistory. The earliest known figurines in Peru date to the Late Preceramic Period (Feldman, 1980:148–156), and examples are found in sites from every subsequent period through the Late Horizon.

For the late pre-Hispanic periods of the south coast, Menzel (1967) has studied and cross-dated collections of clay figurines from Ica, Chincha, and several other areas. She identified a style of unbaked clay figurines from a cache in Ica dating to Ica 6 (= Late Intermediate Period Epoch 6), but could not point to any similar examples from elsewhere. For Late Intermediate Period Epoch 8 and the early Late Horizon, however, Menzel defined a Chincha style of fired clay figurines separate from a wide-spread south coast style of Late Horizon figurines showing Inka influenee. The LIP 8 Chincha style includes several variants: adult female (most common), juvenile female, and infant. The Late Horizon south coast style has only adult females. The figurine fragments from Lo Demás are related to the Chineha and south coast LH styles.

Three figurine fragments were recovered in Sector I and three fragments in Sector IV. Sherds from two pottery vessels with anthropomorphie modelling were also found in Sector I.

Sector I Figurines and Related Pieces

The three figurine fragments from Sector I came from two different contexts, both in Stratigraphic Complex C. A complete head, broken at the neck, was found face up in Subunit 3B (Fig. 33). This head shows most of the characteristics of Menzel's LIP 8/early Late Horizon Chincha style, adult female variant: solid clay fired to a tan-orange color, a squared head, a forehead groove, drop-shaped eyes with the point on the exterior and a hollowed out circle in the middle, and a slit-shaped mouth with trapezoidal outlining (Menzel, 1967:23–25 and Plates XVI–33 to 35, XVII–36 to 38; *see also* Menzel, 1966:88–89 and Kroeber and Strong, 1924:Plate 14, top row). Like one of the Chincha examples illustrated by Menzel (1967:Plate XVI–34), the pieee from Lo Demás has traces of paint (though not in an identical pattern): red on the right side and a dark (black?) triangle on the forehead, with the point of the triangle resting on the nose (paint not shown on Fig. 33).

The Lo Demás head has only two important differenees from the Chincha style figurine canon: the ears are not pierced (although they do have indentations), and a white slip does not cover the surface. However, the white slip could have worn off—the piece comes from a midden, it is broken, and the black and red paint are poorly preserved, all of which suggest that the head might have been handled extensively before being discarded. Two incisions marking the nostrils on the Lo Demás figurine head represent a minor variation from the Chincha style canon; according to Menzel (1967:24), "nostrils are not indicated on Chincha figurines." Nostril-marking is a feature of the earlier, Ica 6 unbaked clay figurines (Menzel, 1967:22).

The other two figurine fragments from Sector I were found together in Feature 120 in Subunits 1C and 10D (Fig. 34), a shallow depression filled with midden and a variety of unusual objects: the two figurine fragments, a small, conical wooden object, a cane or maize leaf carefully shredded into strands and woven into a loose net, and six small balls of dense, concreted sand. Both figurine fragments are made of solid clay fired to an orange color with a cream-colored core, and both show traces of white

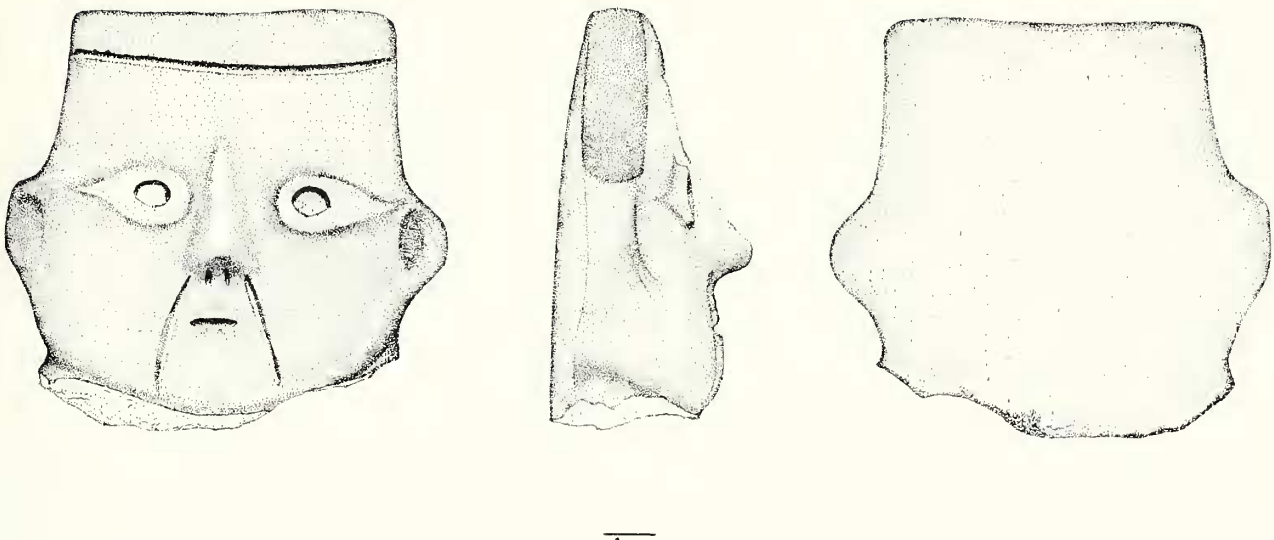


Fig. 33.—Chincha style ceramic figurine from Lo Demás, Sector I, Subunit 3B, level 7c, Stratigraphic Complex C (cat. 1124). Traces of red and black paint on the face are not shown because of the paint's poor preservation, which made it difficult to determine the original form and extent of this decoration.

slip; the two pieces may have come from the same figurine. Unlike the figurine head from Subunit 3B, however, the two pieces from 1C/10D fit Menzel's south coast Late Horizon figurine style (Menzel, 1967:25–30 and Plates XVIII–39 to 42, XIX–46 to 48; *see also* Kroeber and Strong, 1924:Plate 14, lower right) rather than her LIP 8/early LH Chincha figurine style. The grooved forehead, squared head, and white slip on the 1C/10D head fragment (Fig. 34a) are features shared between some examples of the two styles; however, the eye form on this piece is diagnostic of the Late Horizon style. Menzel describes the Late Horizon eyes as

> "lenticular appliqués oriented approximately horizontally, with a lenticular groove separating the area of the pupil from the rest of the eye . . . . This is an eye form used in Inca figurines and may constitute an imitation of Inca eyes in the south coast style" (Menzel, 1967:27).

The sample of south coast LH figurines studied by Menzel also had eyes outlined with paint (Menzel, 1967:27), a feature not present on the Lo Demás specimen.

The leg fragment from Feature 120 supports the LH style attribution of the head (Fig. 34b). The LIP 8 Chincha style figurines have separated legs, while the LH south coast style examples have their legs joined. The leg fragment from Lo Demás had orig-

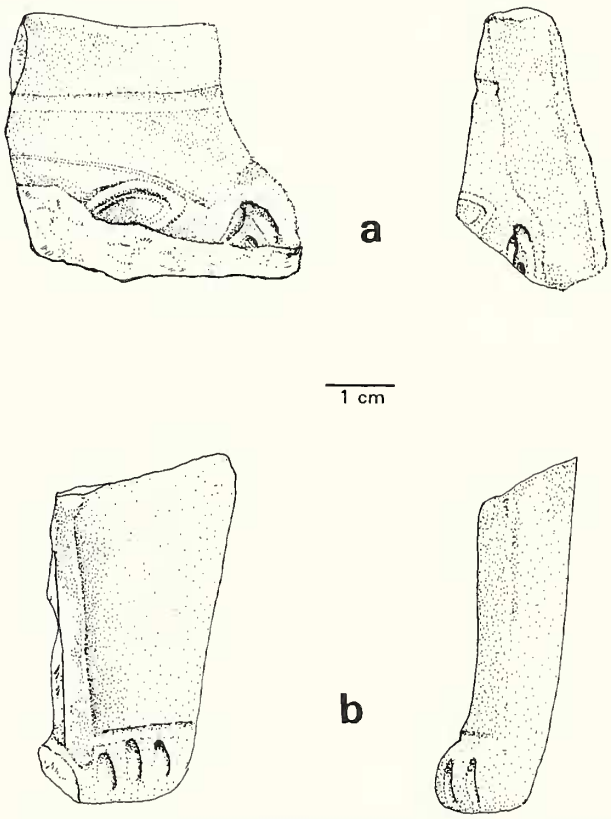


Fig. 34.—South coast Late Horizon style ceramic figurine fragments from Lo Demás, Sector I, Subunits 1C and 10D, feature 120, Stratigraphic Complex C (cat. 848).

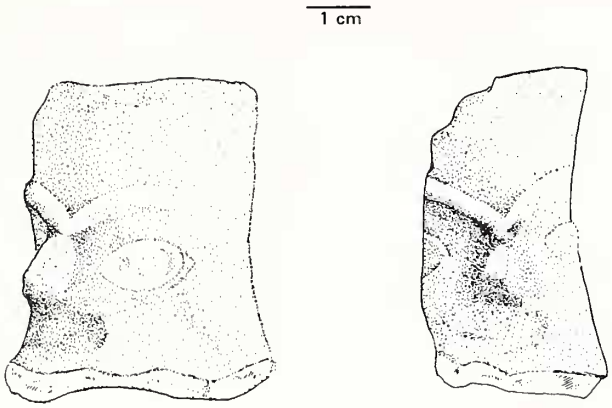


Fig. 35.—Pachacamac-Inka blackware faceneck jar rim sherd from Lo Demás, Sector I, Subunit 4A, level 4, Stratigraphic Complex D (cat. 520).

inally been joined to its pair, as demonstrated by the rough, broken surface on the inside of the leg.

Two pottery finds from the excavations in Sector I have anthropomorphic modelling. One is a blackware sherd from a faceneck jar found in Subunit 4A, Stratigraphic Complex D (Fig. 35). This sherd differs markedly from Menzel's LIP 8/early LH Chincha style faceneck jars in rim form and diameter, and in details of the face (Menzel, 1966:Plate IX–1, 7). Rather, like the Feature 120 head fragment, the eyes of the Lo Demás jar face are the diagnostic grooved, lenticular appliqués of Menzel's (1967) LH south coast style. In her analysis of late Chincha pottery, Menzel (1966:112–113 and Plate XV–65; *see also* Kroeber and Strong, 1924:10, Fig. 1f) discusses and illustrates a blackware, faceneck jar which she identifies as "Pachacamac Inca" and places in her later LH "post-Chincha assemblage." The face on this jar is similar to the Lo Demás specimen except that the specimen illustrated by Menzel and Kroeber and Strong lacks the heavy, modeled eyebrow (or brow-ridge) of the Lo Demás face. Also, the rim on the Menzel/Kroeber-Strong vessel is more everted than the Lo Demás rim. However, Uhle illustrates two blackware faceneck jars from Pachacamac which do have modeled eyebrows identical to the Lo Demás specimen (Uhle, 1903:65, Fig. 79 and Plate 18–2); the rims on the Pachacamac jars are slightly less everted than the Menzel/Kroeber-Strong specimen. Both of the Pachacamac examples came from Late Horizon contexts, the first (Uhle, 1903:Fig. 79) from "graves in the outer city[,] Inca period of the coast land" and the second (Uhle, 1903:Plate 18–2) from the "Cemetery of the Sacrificed Women, Sun Temple."

The second pottery find with anthropomorphic modelling came from Subunit 10D, Stratigraphic Complex B. This find consists of three oxidized, reddish-orange, unpainted sherds with a modeled arm and hand (Fig. 36); two of the sherds fit together and the third, with the hand, clearly belongs to the same vessel. Similar arms and hands are modeled on the side of the "Pachacamac Inca" blackware

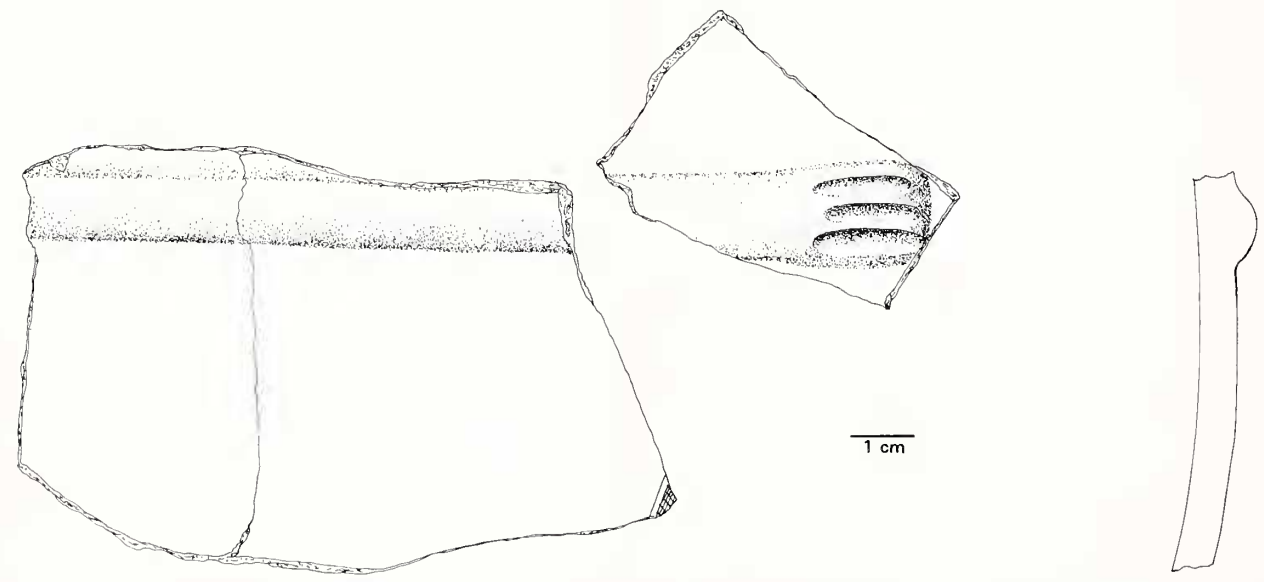


Fig. 36.—Pottery sherds with modelled hand and arm, from Lo Demás, Sector I, Subunit 10D, level 24, Stratigraphic Complex B (cat. 1391).

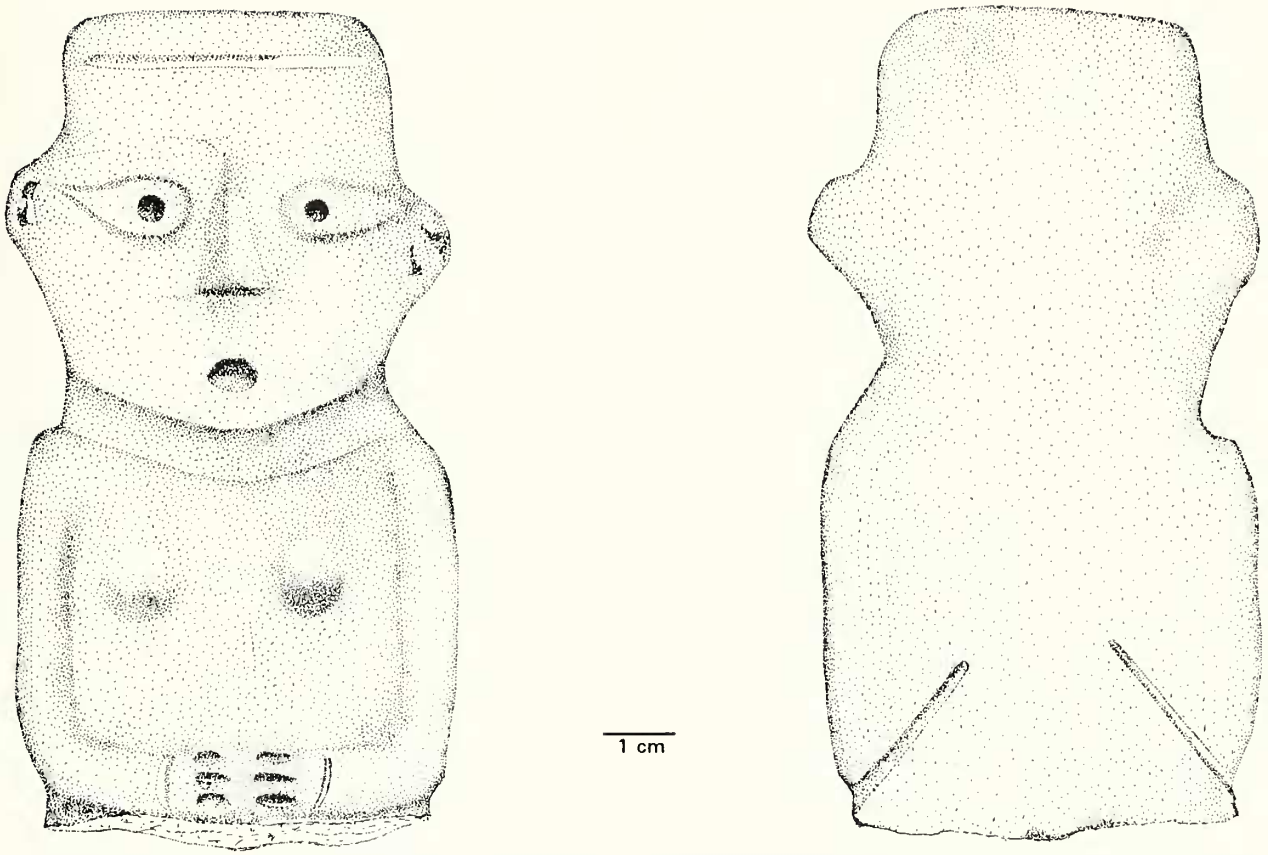


Fig. 37.—Chincha style ceramic figurine from Lo Demás, Sector IV, quebrada profile, from a level equivalent to 12d in Subunit 26D.

faceneck jar illustrated by Menzel (1966:Plate XV–65). Although one of the Chincha style faceneck jars does have short, modeled arms which extend from the shoulder to the neck as tubular handles (Kroeber and Strong, 1924:Plate 12d), no features like the Lo Demás and Pachaeamac Inka arms and hands are seen on any of the Chincha style vessels which Menzel illustrates. Therefore, it seems likely that the arm/hand sculpture on the Lo Demás vessel is a Late Horizon feature, an attibution supported by the close proximity of this sherd to the Cuzco Polychrome A sherd (Fig. 29c).

Sector IV Figurines

Two figurine fragments were excavated from Subunit 26D, and one (two-thirds complete) figurine from stratigraphic context in the quebrada profile adjacent to 26D, in a level equivalent to 26–12d. This latter fragment is the head and torso of an adult female figurine, as indicated by the two small mounds representing breasts; only the legs are missing (Fig. 37). The solid, fired, tan-orange clay construction, traces of white slip, square head, forehead groove, tear-drop eyes with circular depressions, and position of the lower arms and hands identify this piece as a Chincha style figurine (Menzel, 1967:23–25). Like the head from Subunit 3B in Sector I (Fig. 33), the quebrada profile figurine's ears are not fully perforated. It has a smaller head than the 3B specimen and the mouth is not set off by trapezoidal markings.

The other two Sector IV figurine fragments are harder to identify. One is a solid, tan-colored, fired clay leg with incised toes, from level 26–14b (Fig. 38a). Because the leg was not joined to its pair, it can tentatively be assigned to the Chincha style. The second fragment, from Feature 2613i, is a hollow, blackware leg or other appendage with three parallel incisions (Fig. 38b). Menzel (1966:98, 1967:24 and Plates XVI–35, XVII–36) describes the infant variant of Chincha style figurines as hollow, but no blackware Chincha style examples are known for any of the variants, nor does the form of the 26D

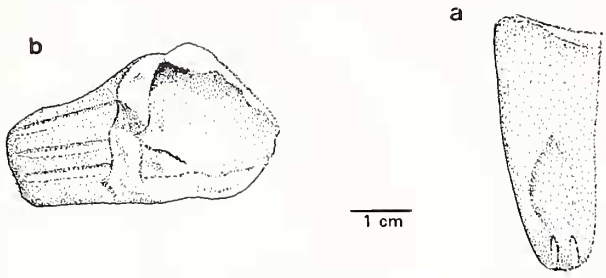


Fig. 38.—Ceramic figurine fragments from Lo Demás Sector IV, Subunit 26D. a) From level 14b (cat. 1853). b) From feature 2613i (cat. 1864).

specimen resemble that of the infant variant figurines' appendages.

Chronological Significance of the Lo Demás Figurines

The presence of both LIP 8/early LH Chincha style and LH south coast style figurines in the same stratigraphic complex (C) in Sector I strongly suggests that the Chincha style remained in use throughout the Inka occupation of Chincha, rather than being replaced shortly after the Inka conquest by the post-Chincha assemblage, as Menzel (1966) claims (analysis of the Lo Demás pottery also suggests this conclusion—*see* Chapter 7). In fact, Menzel (1967:23) writes that "one figurine of [the Chincha] style was found in a later burial of the Inca occupation period, where it represents either the continued use of this style of figurines or possibly an heirloom."

The Chincha style probably does represent the local tradition (Menzel and Rowe, 1966:64) and therefore probably began before the elements of the post-Chincha assemblage were present in Chincha. However, although Menzel (1966:79, 97; 1967:23; Menzel and Rowe, 1966:64–65 and Plate VIII) sees a chronological division of the two styles shortly after the Inka conquest of Chincha, there seems to be no compelling reason to regard the two "units of association" as chronologically distinct during the Late Horizon. The co-occurrence of Inka (or Inka-related) and Chincha style pottery and figurines in the Lo Demás excavations implies the first of Menzel's explanations for the presence of a "Chincha style" figurine in an Inka burial, namely, continued use of the Chincha style throughout the Late Horizon (*see* Chapter 11).

A similar situation apparently occurred at the Cañete valley fishing site of Cerro Azul. Marcus (1987*b*: 37–38, Figs. 21, 22) illustrates a series of seven figurines from burials and structures assigned to the Late Intermediate Period (Marcus, 1987*b*:25). Six of the seven Cañete figurines closely resemble the Chincha style figurines, a resemblance noted elsewhere for the Cañete figurine style in general (*see* Menzel and Rowe, 1966:65; Kroeber, 1937:246–247). The seventh Cerro Azul figurine from Marcus's collection (Marcus, 1987*b*:38, Fig. 22b), however, fits Menzel's (1967:25–29) south coast Late Horizon style, most notably in the lenticular, grooved, painted eyes[67] and in the joined legs (*see* Sandweiss, 1989:284, footnote 162). Presumably, other Late Intermediate Period features on finds from the same context (e.g., the figurine in Marcus, 1987*b*: 38, Fig. 22d) led Marcus to assign an LIP date to this piece; as at Chincha, the co-occurrence of LIP and LH style pieces in the same context argues for the continuation of the local Cañete style throughout the Late Horizon (and greater caution in assigning dates to structures with Late Cañete style contents). The fact that "virtually no Inca pottery has been discovered so far at Cerro Azul, even in those buildings with Inca architectural features" (Marcus, 1987*b*:95) supports the hypothesis that the local pottery styles continued in use throughout the Late Horizon in Cañete as well as Chincha.

Metal Objects

Only a few pieces of metal were recovered from the excavations in Sector I of Lo Demás (Table 9); none were found in the Sector IV excavations. However, part of a collection of metal objects reportedly pulled from the quebrada profile in Sector IV offers further insight into the use of metals in late pre-Hispanic Chincha.

The ethnohistoric record also provides information on Chincha metallurgy (*see* Chapter 2). As Menzel and Rowe (1966:68) point out, "at the time of the Spanish conquest, Chincha had a notable reputation for wealth in precious metals, especially silver." Gold and silver objects were extensively looted from Chincha burials in the early Colonial Period, and Uhle (1924; Kroeber and Strong, 1924) found metal objects—mostly silver—in many of the late Chincha burials which he excavated in 1901.

In addition to the sources for early Chincha looting cited by Menzel and Rowe (1966:68 and footnote 29), the "Aviso" document states that when Hernando Pizarro had the natives of Chincha in *encomienda,* he sent two men to the valley to obtain gold and silver. They met with great success; from an area which probably lay close to El Cumbe and

Table 9.—*Metal objects from Sector I, Lo Demás. Abbreviations: Complex, stratigraphic complex in Sector I; Cat., catalogue number (Sandweiss, 1989:Appendix B).*

Cat.	Sub-unit	Com-plex	Description
387	2D	D	copper hook: question-mark form, upper shaft square, hook curve cylindrical, hook point flattened; overall length: 22.09 mm; hook diameter: 9.00 mm; thickness: 1.02 mm upper shaft, 1.07 mm hook curve, 0.08 mm flattened hook point; weight: 0.420 g before treatment, 0.270 g after treatment
724	4D	D	small, irregular piece of copper; length: 11.05 mm; maximum width: 8.02 mm; minimum width: 7.00 mm; thickness: 3.04 mm
1475	4B	C	small bit of copper, completely oxidized
1471	3B	B	copper wire fragment with one end pointed; length: 48.01 mm; maximum thickness: 2.03 mm; minimum width: 2.00 mm; possibly part of a "tupu" pin
1742	2C	B	small piece of copper oxide
1772	2B	B	rectangular silver sheet, fragment of a larger piece; length: 22.02 mm; maximum width: 10.00 mm; minimum width: 8.03 mm; thickness: 1.08 mm; covered with greenish oxide

Fig. 39.—Copper fishhook from Lo Demás, Sector I, Subunit 2D, level 3d, Stratigraphic Complex D (cat. 387). See Table 9.

La Centinela (*see* Fig. 1), they recovered "one hundred thousand marks of silver in large and small vessels and other insects and snakes and small dogs and deer all in gold and silver" ("Aviso," Rostworowski, 1970:171–172). The "Aviso" (Rostworowski, 1970:168–169) also mentions occupationally specialized gold- and silversmiths, though the author of this document was referring to the Inka empire in general when he discussed the metal workers (*see* Chapter 2).

Enrique Retamozo (1984*a*, 1984*b*, 1985) carried out the technical analyses of metal remains from Lo Demás. Of those from excavation contexts in Sector I, five are copper and one is silver. Three of the copper pieces are too small and corroded to provide any other information. One copper artifact from Stratigraphic Complex B (Table 9:cat. 1471) is a pointed piece of thick wire which Retamozo (1985) believes to have been part of a *tupu* or cloak pin used to fasten women's mantles (*see* Rowe, 1946: 235, Fig. 79a, b). The "Aviso" (Rostworowski, 1970: 168–169) mentions these pins as an example of the light pieces which the gold- and silversmiths of the Inka empire could make for their own gain (*see* Chapter 2).

The final copper object from Sector I consists of a small, question mark-shaped fishhook from Complex D (Fig. 39, Table 9:cat. 387). The upper shaft is square, the curve of the hook is round, and the point is flattened; according to G. Schworbel (Museo Nacional de Antropología y Arqueología, Lima), these attributes are characteristic of late pre-Hispanic Peruvian fishhooks (personal communication, 1984). The Lo Demás hook is evidence of fishing by the late pre-Hispanic inhabitants of the site. The majority of fish remains recovered from Lo Demás come from small species (*anchovetas* and sardines), most of which were probably captured by netting (*see* Chapter 9). However, among the fish remains are elements representing a small number of medium-sized fish of the order Perciformes (*see* Chapter 9), which range from 20 to 60 cm in average length at maturity (Mariano A., 1984; Sánchez, 1973). The Lo Demás hook is appropriate in size for these fish.

The excavated remains from Sector I include one silver object, a piece of sheet silver broken from a larger object whose original form and function cannot be determined (Stratigraphic Complex B; Table 9:cat. 1772). A greenish oxide covers the surface of this piece, suggesting that it may be made of a silver/copper alloy.

The collection of copper pieces loaned to me by Sr. Jesús Pachas, of Sunampe and Tambo de Mora, is of particular interest because it appears to come from a metallurgical workshop (Retamozo, 1984*a*). According to Sr. Pachas, the collection (which now consists of 53 pieces weighing a total of 2,024.3 g, *see* Sandweiss, 1989:Appendix C) represents about one fourth of the metal pieces originally found several years ago in a cloth bag eroding from the que-

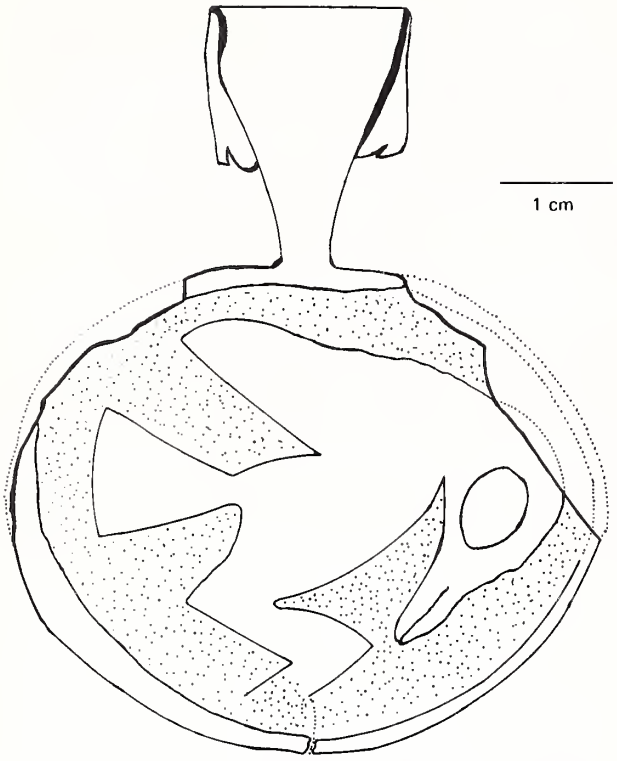


Fig. 40.—Copper tweezers, Pachas collection from Lo Demás, Sector IV (Sandweiss, 1989:Appendix C: #1).

brada profile in Sector IV of Lo Demás, just north of Building IV–2 and about a meter below the surface.

The decoration on one piece, a "pinza" or tweezers, confirms the late pre-Hispanic date of the metal collection (Fig. 40) (Sandweiss, 1989:Appendix C–1). The shape of the tweezers corresponds to Kroeber and Strong's (1924:39–42) Type 7, in their typology of tweezers from Uhle's Chincha gravelots. Kroeber and Strong found Type 7 tweezers in graves of their Late Chincha II period and in graves with mixed or doubtful associations. Late Chincha II corresponds to Menzel's (1966) post-Chincha assemblage, which she considers to be the part of the Late Horizon during which the Inka controlled Chincha (*see* Chapters 4, 7, and 11).

The bird design on the tweezers is incised, with the background stippled in contrast to the smooth body of the bird (Fig. 40). The bird is long-necked, with a single, large round eye, long legs, a triangular tail, a swept-back wing, and a body of indeterminate form. In part, the form of the design is constrained by the shape of the decorated surface; nevertheless, the tweezers bird closely resembles the birds painted on the walls of Room IV–1a in Building IV–1 in Sector IV of Lo Demás, especially in the form of the eye, wing, and tail (compare Fig. 40 with Figs. 16 and 17). It is even more similar to the birds on three round, incised metal ear plugs from graves excavated by Uhle (Kroeber and Strong, 1924:43, Fig. 25a–c). In the case of one plug (Kroeber and Strong, 1924:Fig. 25b), the resemblance verges on identity, the only difference being that the ear plug shows two mirror-image birds connected at the feet. Furthermore, "in all three specimens [from the Uhle collections] the disk pattern consists of smooth bird figures surrounded by embossing or stippling" (Kroeber and Strong, 1924:43). Kroeber and Strong found the bird-decorated ear plugs only in graves which they classify as Inka and Late Chincha II (Late Horizon), confirming the late date of the metal collection and its contemporaneity with the excavated deposits in Sectors I and IV of Lo Demás.[68]

The bird tweezers are the only piece in the metal collection that bears a decoration and is part of a finished artifact; the rest of the material consists of pieces of metal broken while being worked (Sandweiss, 1989:Appendix C–Group I), bits of metal laminae cut off from larger sheets (Sandweiss, 1989: Appendix C–Group II), and pieces of metal that had been poorly founded (Sandweiss, 1989:Appendix C–Group III) (Retamozo, 1984*a*). Even the tweezers may have been broken during the final stages of preparation. The collection resembles the kind of debris generated by metalworking,[69] indicating that it originally came from a metallurgical workshop.

The Sector IV metal collection raises a series of questions. Where was the workshop which produced the pieces? If it was not at Lo Demás, why was the collection found there? What does the collection indicate about specialization? The fishing site has no traces of copper slag or of large ash deposits, much less of smelting furnaces such as those Shimada et al. (1982) describe for the north coast; thus, the workshop was not part of Lo Demás (at least not the surviving portion of the site). The Chincha style decoration on the bird tweezer suggests that the workshop was in Chincha. A surface collection made in 1984 along the bluff to the north of Lo Demás contains a number of metal ojects, including a metalworking tool called a "cincél" or chisel (Vivanco, 1987:99). This object was found ca. 5 km to the north of Lo Demás and had apparently eroded from a grave on top of the bluff. The same site yielded 23 pieces of metal very similar to the Pachas collection: sheet fragments and poorly founded or broken pieces of copper (Vivanco, 1987:97, Cuadro 4).

Sixteen more laminae came from a nearby site, a few hundred meters along the bluff. The cincél site (Vivanco, 1987:99–100) also produced a complete copper bowl in a typical south coast form, the shallow dish with basal flange (Menzel, 1976:39–42 and Plates 3–48 to 57, 19–225 to 227).[70] Other finished metal artifacts of various types were found at a number of other locations along the bluff (Vivanco, 1987: 93–102). All of these surface finds (from disturbed burials) suggest that a metallurgical workshop was located somewhere near the bluff to the north of Lo Demás and might be found by further field work.

Given that the workshop was not part of Lo Demás per se, why was a collection of workshop debris located in Sector IV? One explanation is that, although located elsewhere, the metalworkers were specialists attached to the fishing lord who presumably resided in Sector IV of Lo Demás,[71] a relationship similar to that enjoyed by gourdworkers (*see* section on gourds below and Chapter 10).

An alternative hypothesis is that the bag of metal debris represents either trade goods or the pieces of copper which the "Aviso" (Rostworowski, 1970: 171) says were used by the merchants to buy and sell food and clothing. Rostworowski (1970:154) believes that the merchants of Chincha obtained metal from the southern highlands[72] and sent it north by sea to Ecuador to trade for *Spondylus* shell and other items. The eollection of copper pieces could have been intended for trade in the north; the fishermen would certainly have been involved in the maritime trade, at the very least as crew for the trading rafts.

There is a discrepancy between the Lo Demás and related finds on the one hand and the documents and Uhle's discoveries on the other. The early sources mention gold and silver and their respective smiths, and Uhle found mostly silver in the Chincha burials, but the materials found in Lo Demás consist almost entirely of copper. According to the "Aviso" (Rostworowski, 1970:168–169), the gold- and silversmiths did not pay tribute, but instead made objects for the Inka and at his behest for other lords. However, the "Aviso" does not mention copperworkers, though it does say that copper was a medium of exchange in the valley. The documentary evidence thus suggests that if there were metalworkers attaehed to the fishing lord, they were dependent specialist coppersmiths, not independent specialist gold- or silversmiths. The "Aviso" (Rostworowski, 1970: 171) states that in Chincha, copper had a fixed rate of exchange for gold and silver. This, in turn, suggests an articulation between two different circulation networks, one for copper and one for precious metals. The predominance of copper in the limited collection of metal recovered from Lo Demás supports this interpretation of the documents. In this context, the archaeological evidence suggests that metallurgical workshops were specialized in copper or in precious metals, and that different metals circulated through different routes within Chincha society.

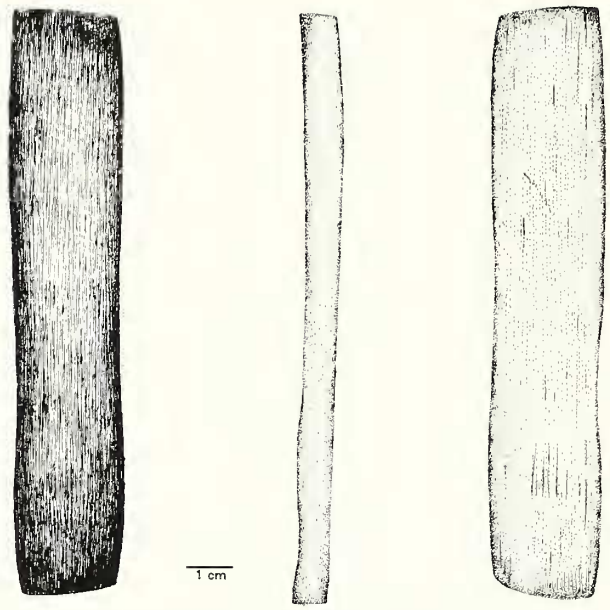


Fig. 41.—Wooden *mallero* (net-making tool) from Lo Demás, Sector I, Subunit A2, level 3bii, Stratigraphic Complex C (cat. 52).

Wooden Objects

We found three classes of wooden artifacts during the excavation of Sector I, two represented by one specimen each and one represented by 17 specimens. One of the unique objects is a net-making tool; the second is probably a weaving tool. The function of the third class is uncertain. The deposits in Sectors I and IV also contained pieces of wood which appear to be debris from woodworking.

Mallero (Net-gauge)

A *mallero* is a tool used to make and repair nets. *Malleros* are rectangular, with squared ends; the dimensions of the tool dictate the mesh size of the net to be made. Different mesh sizes are used for different classes of fish. The *mallero* from Lo Demás (Fig. 41) came from Stratigraphic Complex C in Subunit A2. It is made of a hard, dark wood and

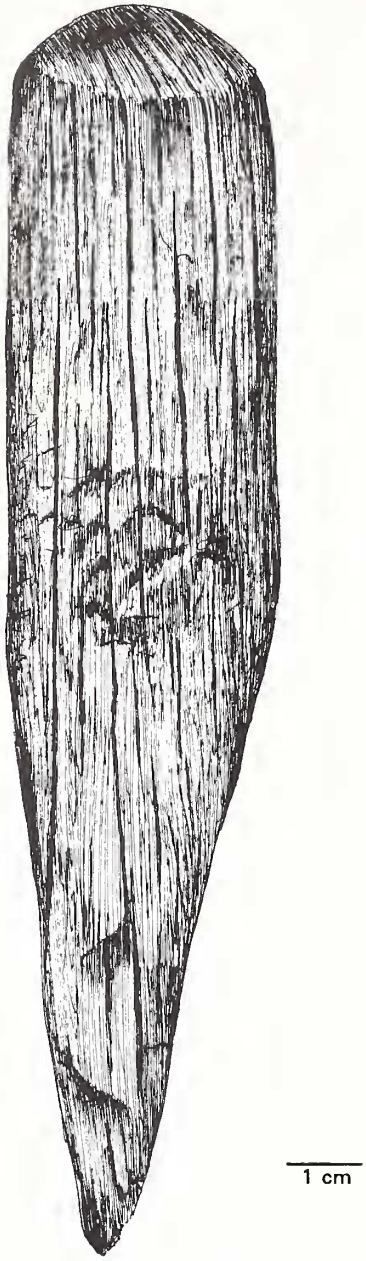


Fig. 42.—Wooden *ruqqui* (weaving tool) from Lo Demás, Sector I, Subunit IA, feature 117W, Stratigraphic Complex C (cat. 749).

has a surface polish that probably reflects use. The *mallero* is 12.75 cm long and 2.39 cm wide, with a maximum thickness of 1.00 cm along the longitudinal centerline and less on the edges. According to traditional fishermen in Tambo de Mora, the Lo Demás *mallero* is appropriate for small-mesh nets of the kind used to catch small schooling fish such as *anchovetas* and sardines, the two predominant fish species in the Lo Demás midden (*see* Chapter 9).

The use of *malleros* in pre-Hispanic Peru is well known. One example close in time, space, and context was found by Marcus (1987*b*:73, Fig. 47B) in the Late Intermediate Period component of the Cerro Azul fishing site in Cañete, the next valley to the north of Chincha; this specimen is also made of wood and measures approximately 8.5 cm by 2.3 cm (thickness could not be determined from the published illustration). A possible bone mallero found in Sector IV of Lo Demás (*see below,* section on Bone and Shell Objects) indicates that a variety of materials may have been used to make this class of tool.

Ruqqui

A wooden object (length = 16.08 cm, diameter = 3.78 cm) resembling a stake was recovered from Stratigraphic Complex C in Subunit 1A of Sector I (Fig. 42). This specimen is cylindrical, with one end bilaterally planed to form a blade. The other end is slightly rounded. Bernardino Ojeda (Centro de Investigaciones de Zonas Aridas, Lima) identified the Lo Demás stake as a "ruqqui," a tool used in weaving to tighten the textile on the loom. Gonçalez Holguin (1952 [1605]) defines *ruqqui* as "the bone with which they tighten" textiles ("el huesso con que tupen"). A similar tool made of bone was found in Subunit 26D in Sector IV (*see below,* section on Bone and Shell Objects).

A number of wooden implements were recovered from Chincha graves by Uhle (Kroeber and Strong, 1924:34–35 and Fig. 16). "Wooden pegs or stakes" range in length from 25 to 50 cm (significantly longer than the Lo Demás specimen) and have a consistent diameter (unlike the Lo Demás stake). The Uhle collection also has three types of wooden objects with flattened ends (Kroeber and Strong, 1924:35 and Fig. 16). The Lo Demás stake most closely resembles the first of these types (Kroeber and Strong, 1924:Fig. 16g–k),[73] but it is significantly shorter and lacks a knob. Kroeber and Strong do not assign a function to this type of wooden object, though they suggest that larger wooden tools with flattened ends from the Uhle collection were used in agricultural work (*see also* Kvietok, 1987, for a discussion of south coast digging sticks). Given the differences between the Lo Demás stake and the wooden implements described by Kroeber and Strong (1924),

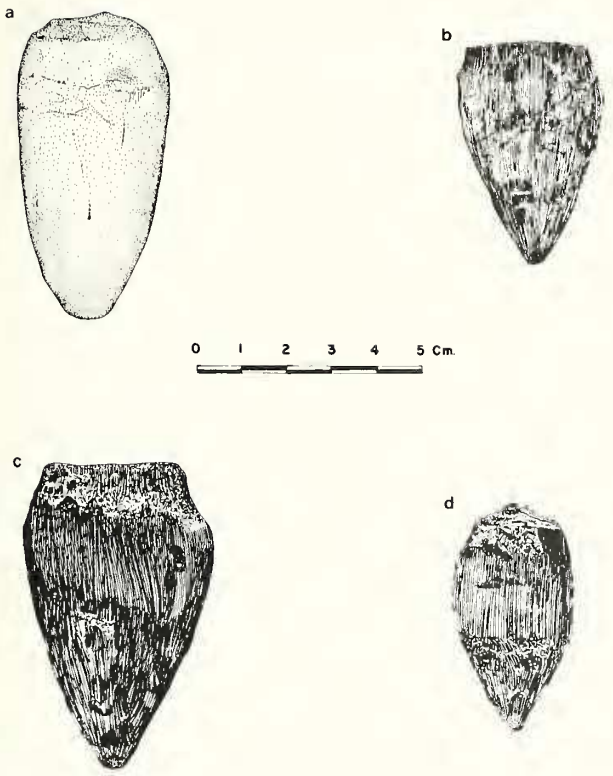


Fig. 43.—Conical wooden objects from Lo Demás, Sector I, Stratigraphic Complex C. a) and b) From Subunit 2B, level 8b (cat. 834). c) and d) from Subunit 3A, level 5di (cat 856). See Table 10.

the use of the stake as a farming tool seems unlikely and its identification as a weaving *ruqqui* is the best interpretation.

Conical Objects

The 17 conical wooden objects from Lo Demás vary in exact dimensions but share a general design (Fig. 43, Table 10). All have a cylindrical body with one end narrowed to a point and the other end cut off flat; the circumference of the object on the flat end is often reduced, resulting in a sort of "waist" (Fig. 43b–d).

These objects were recovered from the three major stratigraphic complexes (B to D) in Sector I and from Subunit 26D in Sector IV. Most came from Complex C in Sector I, where the majority of the specimens were found in groups of two (Table 10: cat. 856) and three (Table 10:cat. 834, 917). These groups occurred in a horizontally and vertically restricted area and probably were all deposited together.

The function of the conical wooden objects from

Table 10.—*Conical wooden objects. Abbreviations: Complex, stratigraphic complex in Sector I; Cat., catalogue number (Sandweiss, 1989:Appendix B); Diameter, maximum diameter; H/D, ratio of height to maximum diameter. All measurements are in cm.*

Cat.	Subunit	Complex	Level	Height	Diameter	H/D
		Sector I				
17	A1	D		5.2	2.4	2.2
19	A2	D		6.3	irregular shape	
19	A2	D		3.5	2.0	1.8
294	2B	D		5.7	2.2	2.6
425	2D	D		5.4	2.8	1.9
834	2B	C		6.6	3.4	1.9
834	2B	C		3.7	3.2	1.2
834	2B	C		6.7	4.4	1.5
856	3A	C		6.8	4.1	1.7
856	3A	C		4.9	2.7	1.8
917	2B	C		4.6	2.6	1.8
917	2B	C		5.1	3.0	1.6
917	2B	C		5.0	3.1	1.6
1907	Col. I	C		5.7	3.0	1.9
1750	2C	B		6.5	2.7	2.4
		Sector IV				
Cat.	Subunit		Level	Height	Diameter	H/D
1725	26D		26-4c	4.0	4.0	1.0
1851	26D		26.13b	4.0	2.4	1.7

Lo Demás is difficult to determine. The items belong to a class of common coastal artifacts usually referred to in Peru as "flotadores" (floats) because of their superficial resemblance to net floats. However, there is no direct evidence to support this functional attribution; to my knowledge, no conical wooden "flotador" has ever been found attached to a net, though gourd floats have been found tied to nets in Andean coastal sites dating as early as the Late Preceramic Period (Bird et al., 1985:225, Fig. 171). On the other hand, many of the specimens from Lo Demás were covered with salt crystals, which may be evidence for immersion in salt water, albeit weak, because the salt air of the coast can permeate the archaeological deposits.

An alternative explanation is bottle stoppers. Rogger Ravines (personal communication, 1984) recalled seeing similar objects used as bottle stoppers in the Peruvian highlands, and he suggests that they may have had the same function in pre-Hispanic coastal sites. The bottle stopper hypothesis would account for the variation in size of the different specimens (in accordance with variable bottle mouth sizes); bottles are a fairly common form in the Lo Demás pottery assemblage (Fig. 25). The

Table 11.—*Wood fragments. Abbreviations: Su, Subunit; SC, stratigraphic complex in Sector I; Cat., catalogue number (Sandweiss, 1989:Appendix B). Codes: Fi, fibrous; Fr, fragment; Fr+R, fragment with rounded end; HE, outer rings of tree; L, lustrous; PC, partially cut; Po, porous; S, smooth; WC, wood chip; +B, with bark; +C, charred. Measurements are in cm. Widths are maximum/minimum.*

Cat.	Su	SC	Level	Texture	Type	No. Cuts	Length	Width
				Sector I				
365	3A	D		Po+C	F	0	9.1	1.3/0.5
404	1B	C		S	PC	2		
404	B	C		S	PC	1		
498	1C	C		S	HE	0		
1242	3B	B		S	PC	1	5.3	1.2/0.2
1590	2B	C		S+C	F	0		
1591	2B	C		S	PC	?		
1669	2A	B		Fi	WC	2	2.5	2.5/0.6
1701	2A	B		Fi	Fr	0		
1701	2A	B		Fi+C	Fr	0		
1729	2C	B		S	HE	0		
1729	2C	B		Fi	WC	2		
1730	2C	B		Fi	WC	2		
1730	2C	B		S+B	PC	1		
1732	2C	B		Po	Fr	0	0.9	
1732	2C	B		Po	Fr	0		
1732	2C	B		Po	Fr	0		
1733	2C	B		S+B	Fr	0		
1750	2C	B		Fi	WC	2		
1774	4D	B		S	HE	0		
1774	4D	B		S	Fr	0		
1774	4D	B		Po	Fr	0		1.0
1827	4B	B		S	PC	10	10.0	3.3/0.4
1833	4B	B		S	PC-HE	2	8.3	4.0/0.3
1833	4B	B		P	Fr	0		
				Sector IV				
1681	26D		2	Po	Fr	0		
1681	26D		2	Po	Fr	0		
1725	26D		4c	S+C	Fr	0		
1725	26D		4c	S+C	Fr	0		
1726	26D		5	S+C	Fr	0		
1726	26D		5	Po	Fr	0		
1726	26D		5	Po	Fr	0		
1726	26D		5	Po	Fr	0		
1726	26D		5	Po	Fr	0		
1726	26D		5	Fi	WC	2		
1726	26D		5	S	PC	1		
1727	26D		5i	Fi	WC	1		
1727	26D		5i	Fi	WC	1		
1727	26D		5i	Fi	WC	1		
1727	26D		5i	Po	Fr	0		
1788	26D		f.2603i	S	PC	1		
1810	26D		12i	Fi+C	Fr	0	0.7	0.9/0.2
1823	26D		17i	S+B	Fr	0	3.3	5.1/0.9
1838	26D		12c	Po	Fr	0		
1838	26D		12c	Po	Fr	0		
1838	26D		12c	Po	Fr	0		
1838	26D		12c	Po	Fr	0		
1838	26D		12c	Po	Fr	0		
1838	26D		12c	S	HE	0	1.1	0.1
1838	26D		12c	S	PC	3	5.0	1.1/0.4
1839	26D		12d	Po	Fr	0		
1839	26D		12d	Po	Fr	0		
1839	26D		12d	S	PC	2		
1839	26D		12d	S	PC	2	2.0	0.3
1839	26D		12d	S	PC	3	2.0	0.5/0.3

Table 11.—*Continued.*

Cat.	Su	SC	Level	Texture	Type	No. Cuts	Length	Width
1839	26D		12d	S	PC	1		
1839	26D		12d	Fi	WC	2		
1839	26D		12d	S+C	Fr	0	4.0	
1841	26D		13	S	PC	3	5.1	0.2
1841	26D		13	Fi	Fr	0	4.5	
1841	26D		13	Fi	WC	2		0.5
1851	26D		13b	S+C	Fr	0	2.0	1.1/0.3
1851	26D		13b	Fi	WC	2	7.5	0.2
1851	26D		13b	Fi	WC	2		
1851	26D		13b	Fi	WC	2		
1851	26D		13b	Fi	PC	1	3.0	4.0/0.2
1851	26D		13b	S	HE+PC	2	2.2	2.0/0.2
1854	26D		15	S	Fr	0	8.0	3.0/0.3
1854	26D		15	S	PC	2	6.1	0.5/0.3
1854	26D		15	Fi	Fr	0	0.7	1.0/0.7
1854	26D		15	S	PC	1		
1858	26D		16	Fi	Fr	1	1.5	0.7
1858	26D		16	S	Fr	0		0.9
1858	26D		16	Fi	PC	1		
1858	26D		16	Fi	PC	2		
1858	26D		16	Fi	PC	2	1.0	1.5
1861	26D		f.2612	Fi	Fr+R	2	1.2	1.0
1861	26D		f.2612	Fi	PC	2		

Totals	
Sector I	25
Complex D	1
Complex C	5
Complex B	19
Sector IV	
Subunit 26D	53
Combined	78

average maximum diameter of the conical wooden objects is 3 cm, while the average minimum orifice diameter of the Lo Demás bottle *sherds* is 4 cm; however, the actual average minimum orifice diameter of the *bottles* was probably closer to the maximum diameter of the wooden cones.[74] The conical wooden objects could also be stoppers for gourd bottles (J. Quilter, personal communication, 1991). However, the bottle stopper hypothesis does not necessarily explain why *groups* of the objects were needed. Furthermore, the inflexibility of the wood combined with the rough working of most specimens suggests that the conical wooden objects would not have made very effective stoppers.

As another alternative, Francisco Iriarte (personal communication, 1984) has proposed that these objects were children's tops.

Modified Wood Fragments

This category includes pieces of wood that do not appear to have been artifacts but which show modification (e.g., cut marks), or whose shape suggests that they had been cut from a larger piece. A total of 78 such wood fragments were recovered from Lo Demás, 25 in Sector I (all subunits combined) and 53 in Subunit 26D of Sector IV (*see* Table 11). The majority from Sector I came from Stratigraphic Complex B.

The presence of modified wood fragments implies a limited amount of woodworking at Lo Demás, especially in Sector IV in or around Building IV–2. The frequent presence of cut marks and the fact that few specimens are charred argues against fuel as the primary use of the wood. Kvietok's (1988) analysis of edge damage on selected cobble cortex flakes from Lo Demás indicates that at least one of these flakes was used to work a hard material such as wood (*see below,* section on lithics). Although few cobble cortex flakes were recovered from the same proveniences as wood fragments,[75] such flakes were present in all stratigraphic complexes in Sector I as well as in many levels from Subunit 26D in Sector IV (*see* Table 22). Also present at Lo Demás were pieces of false coral (calcareous heads of polychaete worms);

Table 12.—*Gourd rind fragments from Subunit 10D, Sector I, Lo Demás. Abbreviations: SC, stratigraphic complex in Sector I; Cat., catalogue number (Sandweiss, 1989:Appendix B); P/S, peduncle with stem; G/P, rind with peduncle attached.*

Cat.	SC	P/S	G/P	Body	Rim	Total	Remarks
592	D	0	0	1	0	1	charred on one side
593	D	0	0	2	0	2	
693	C	0	0	2	0	2	
719	C	0	0	0	2	2	
730	C	0	0	1	0	1	possible decoration
791	C	0	0	5	0	5	3 charred
792	C	0	0	5	0	5	1 charred
830	C	0	0	1	0	1	cut
932	C	0	0	1	1	2	rim charred
1089	B	0	0	1	0	1	
1325	B	0	0	1	0	1	bit of pyroengraved design
1326	B	0	0	0	1	1	possible design on exterior; ca. 26 cm diameter
1327	B	0	0	1	1	2	rim ca. 10 cm diameter
1328	B	0	0	1	0	1	possible decoration
1390	B	0	0	4	0	4	1 w/drilled hole and cut sides; 1 with line; 1 possible top of gourd
1391	B	0	0	10	0	10	1 round w/drilled indentation; 1 charred on one end
1418	B	0	0	2	0	2	
1424	B	2	1	13	0	16	1 w/darkened zone
Total		2	1	51	5	59	

Topic (1982:164) found this material in woodworking shops at Chan Chan, where it was used as a rasp for planing and smoothing. These data suggest that woodworking at Lo Demás may have included manufacture of some or all of the wooden artifacts discussed above.

Worked Gourd

Gourd (*Lagenaria siceraria*) rind fragments were common at Lo Demás, as were gourd seeds and, less so, peduncles (*see* Chapter 10).

The gourd samples, from Subunit 10D in Sector I (Table 12) and Subunit 26D in Sector IV (Table 13) differ significantly. Gourd rind fragments, peduncles, and seeds are more abundant in the latter sector, and the percentage of peduncles among all rind fragments in 26D is double that in 10D. Seeds and peduncles are removed in the process of making gourd utensils, implying gourd utensil manufacture in Sector IV of Lo Demás, a hypothesis expanded in detail in Chapter 10.

Gourds apparently were important as containers at Lo Demás. Rim sherds occur in the samples from both sectors, and two of the burials in Sector II had associated offerings of gourd vessels containing food. Uhle also found gourd containers in late pre-Hispanic burials in Chincha associated with pottery belonging to Kroeber and Strong's (1924:36–37) Late Chincha I and Inka "culture styles" (i.e., Menzel's [1966] Chincha style and post-Chincha assemblage, respectively). These vessels apparently all contained cotton and yarn, so the discovery of gourds with food in Sector II of Lo Demás is an important addition to our information on Chincha gourd use.

A number of the gourd rind fragments from Lo Demás had traces of pyroengraved designs, but only two examples are sufficiently well preserved to allow reproduction of the design (Fig. 44). Both specimens are rim sherds and come from Subunit 4B in Sector I (not part of the 10D and 26D samples discussed above), one from Stratigraphic Complex B and one from Complex C. The specimen from Complex C (Fig. 44a) has a row of semi-abstract birds positioned just below the rim; two horizontal lines separate the birds from a geometric design of nested rectangles. The birds resemble those on the ear plug from an early Colonial Period burial (Kroeber and Strong, 1924:43, Fig. 25c) and are even more similar to a Late Horizon Ica 9 (Inka occupation period) design (Menzel, 1976:Plates 34-445 and 56-64a, b).

The second pyroengraved gourd fragment (Fig. 44b) has a geometric design consisting of vertical diamonds with scalloped edges and an interior cross connecting the four points of the diamond. An apparently undecorated zone runs along the rim; the diamonds are separated from this zone by a horizontal line. The total design field seems to be one diamond in width, with a second horizontal line

Table 13.—*Gourd rind fragments from Subunit 26D, Sector IV, Lo Demás. Abbreviations: Cat., catalogue number (Sandweiss, 1989: Appendix B); P/S, peduncle with stem; G/P, rind with peduncle attached.*

Cat.	Level	P/S	Stem	G/P	Body	Rim	Total	Remarks
1679	1	0	0	0	1	1	2	body w/pyroengraved design; rim is cut
1680	1b	2	2	0	3	0	7	1 body charred
1681	2	0	0	0	8	0	8	1 body charred
1717	3	0	0	0	6	0	61	body w/possible design (scratches)
1718	3b	0	0	0	10	0	10	
1719	4	1	0	1	15	0	16	1 body w/cut mark
1720	4b	0	0	0	8	0	8	
1725	4c	1	0	0	1	0	2	
1726	5	1	0	0	9	0	10	
1738	5bi	0	0	0	0	1	1	cut rim, ca. 27 cm rim diameter
1743	5c	0	0	0	3	0	32	charred, 1 w/cut marks
1744	6	0	0	0	1	0	1	
1765	7b	0	0	0	5	0	5	1 w/cut mark
1777	8	2	0	0	3	0	5	1 body w/cut mark, 1 body w/trace of pyroengraved line
1778	9	2	0	0	8	1	11	1 cut body
1788	f.2603i	0	0	0	1	0	1	
1790	f.2605	0	0	1	2	1	4	rim and 1 body possibly pyroengraved, 1 body charred
1800	10	0	0	2	10	0	12	
1806	11	0	0	0	2	1	3	
1809	12	0	0	1	4	0	5	1 circular cut body w/hole in middle, 1 body is a neck sherd
1811	f.2606	0	0	0	4	0	4	
1839	12d	0	0	0	6	0	6	1 w/incised line, 1 from shoulder w/drilled hole
1841	13	0	0	0	3	0	3	1 w/cut mark
1852	13bi	2	0	0	17	0	19	1 body w/incised line and darkened zone, 1 body w/cut mark
1859	13b	9	0	0	42	0	51	top of one stem slightly charred, 2 bodies w/cut marks
1887	14	1	0	0	5	0	6	1 body cut into round shape
1888	f.2610	0	0	0	8	0	8	2 w/cut marks, 1 cut round w/charred hole in middle
1853	14b	0	0	0	11	0	11	1 round body
1854	15	4	0	0	11	1	16	1 body w/possible pyroengraved design
1858	16	0	0	0	3	0	3	1 possible cut mark
1862	f.2612i	0	0	1	0	0	1	
1863	f.2613	0	0	0	2	0	2	1 cut
1864	f.2613i	1	0	1	2	0	4	1 body w/charcoal on interior, 1 body with cut mark
Total		26	2	7	214	6	255	17 cut, 6 w/design or possible design

running along the base of the field; half-diamonds abut both the upper and lower horizontal lines and alternate with whole diamonds which run from line to line. None of the decorated Chincha artifacts illustrated by Kroeber and Strong (1924) have this pattern, but similar vertical diamonds with interior crosses appear on an Ica 9 (Late Horizon) pot—a vessel which also bears the bird design found on the Complex C pyroengraved gourd (Menzel, 1976:Plate 56–64a, b).

Nets

Net fragments were encountered throughout the excavated deposits in Sector I of Lo Demás. Five large net fragments occurred in situ in the quebrada profile below the 1983 test pits. However, net fragments did not occur in Subunit 26D in Sector IV, nor were any visible in the Sector IV quebrada profile. Fattorini (1984) studied the net fragments from all subunits of the 1983 excavations and DiAnderas (personal communication, 1985) studied those from all subunits of the 1984 excavations.

Analysis of the 1984 collection provides the most detailed information on nets from Lo Demás. The 67 net fragments in this collection came from all three major stratigraphic complexes (B to D), with most concentrated in Complex B (Table 14). In all but one case, the knots are the "simple knot" (d'Harcourt, 1962:105–106 and Fig. 74; *see also* "nudo simple" in Bonavia, 1982:124, Dibujo 42) (Fig. 45A), about which d'Harcourt writes

> "The common netting knot used in Peru is an unstable one. It is a simple (overhand) knot joining the yarn that forms the new mesh row to the center of the corresponding mesh of the

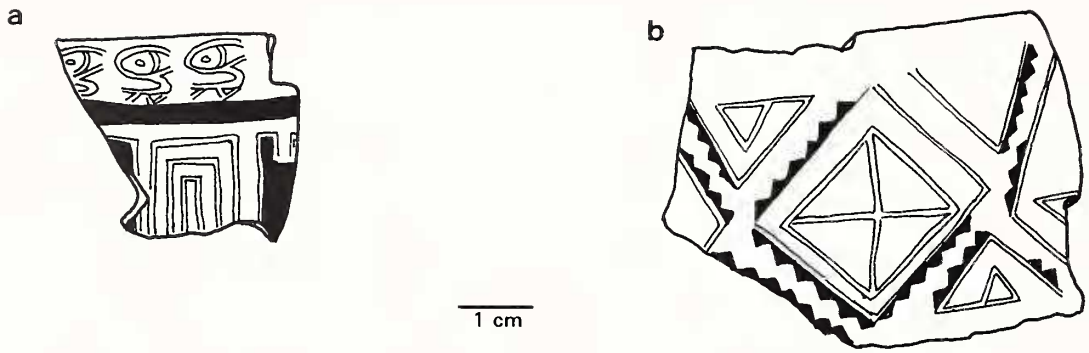


Fig. 44.—Pyroengraved gourd fragments from Lo Demás, Sector I. a) From Subunit 4B, feature 483c, Stratigraphic Complex C (cat. 1713). b) From Subunit 4B, level 24, Stratigraphic Complex B (cat. 1846).

> preceding row. . . . It is in this way that fish nets, carrying nets, and the more delicate nets that are suspended like little bags from the beam bars of scales . . . are made. . . . This knot does not prevent slipping of the cord or yarn it entwines, and this defect can cause a distortion of the network" (d'Harcourt, 1962:105).

One 1984 specimen has a different knot; in Complex B, a net fragment had two varieties of square knot (Fig. 45C and C1) (*see* d'Harcourt, 1962:106–110 and Fig. 76).

All of the net fragments from Lo Demás are made of two-ply yarns. All but four of the 1984 examples are of vegetal fiber (not cotton) and are Z-spun and S-plied (Table 14). Two of the four exceptions, from Complex B, are made of cotton and are S-spun and Z-plied. The other two exceptions, also of cotton, are Z-spun and S-plied, like the vegetal fiber nets.

Complete meshes were preserved on only six of the 1984 specimens, and two of these examples came from the same net. One measure of mesh size, the sum of four sides, ranges from 40 mm to 65 mm (Table 14). This measurement can be translated into three other measures commonly used in Peru: *cuadrado, estirado* or *plana,* and *dedo* (Coker, 1908–II: 57–58). *Cuadrado* refers to the length of one side of the mesh; *estirado* (or *plana*) is measured by pulling the mesh from opposite corners and measuring the maximum extension (= twice the length of an average side, or *cuadrado*); *dedo* refers to the number of fingers that can be placed in one mesh. Though least accurate, the last measure is the one most commonly used by Peruvian fishermen. The sum-of-four-sides is used here as the most accurate and practical measurement on archaeological specimens (Sandweiss, 1989:322, footnote 182).

Coker (1908–II:58) presents a table of *dedo-plana-cuadrado* equivalents for the nets used for different species of fish at the time of his study. That table is reproduced here (Table 15) with the addition of the "sum-of-four-sides" measure (calculated by multiplying Coker's *cuadrado* by four). These data clearly indicate that the mesh sizes of nets from the 1984 excavations in Sector I of Lo Demás are equivalent to those of *pejerreyera* and *anchovetera* nets. The pejerrey (*Odontesthes regia regia*) is a small fish (14–30 cm long, Sánchez Romero, 1973:184), about the same size or a bit smaller than sardines (*Sardinops sagax sagax*) (22–37 cm long, Sánchez Romero, 1973:188) but slightly larger than the *anchoveta* (*Engraulis ringens*) (12–18 cm long, Sánchez Romero, 1973:159). The fish remains in Sector I of Lo Demás consist mainly of sardines and *anchovetas*; pejerrey were not present (Chapter 9). Nets appropriate for pejerreys would be appropriate for sardines, so the net sizes identified for the 1984 collection are entirely appropriate for the fish species found in the same contexts. William Atuncar, a local traditional fisherman, confirmed this observation at the same time as he told me that the *mallero* (*see above,* section on Wooden Objects) was the right size to make and repair the nets found in the excavations.

The 1983 collection of net fragments includes 18 examples (Table 16), with the majority in Complex D and the rest in Complex C (Complex B was not present in the 1983 excavation area). A much higher proportion of these net fragments were made of cotton than in the 1984 excavation sample, though vegetal fiber still predominates. The 1983 collection has a greater variety of knot types than the 1984 collection; simple and square knots account for only a third of the cases, while the other two thirds used the cowhitch knot (Fig. 45B) (Emery, 1966:35 and Figs. 27, 28). Cowhitches are generally used on the edges of nets. The three 1983 examples with simple

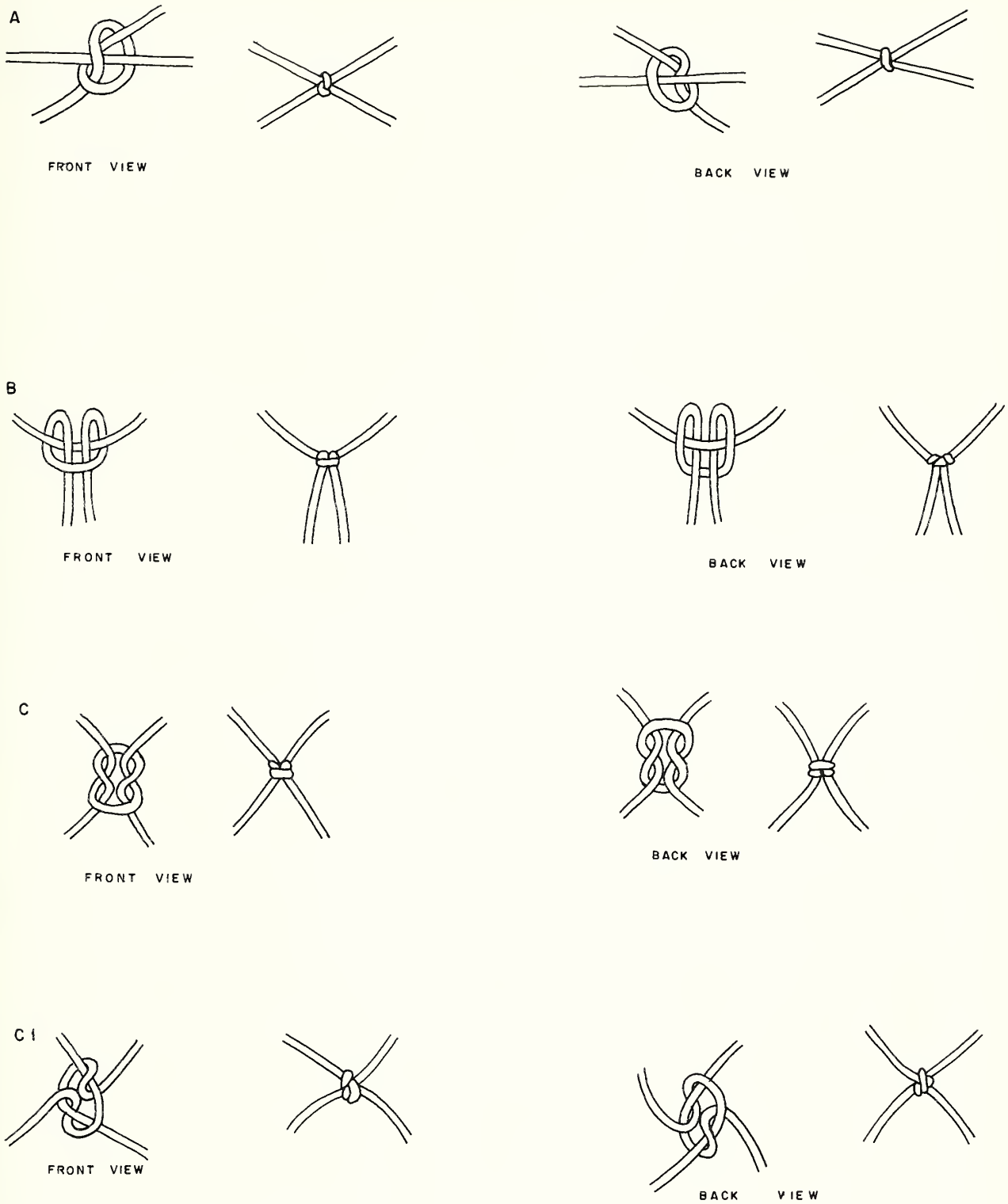


Fig. 45.—Netting knots. A) Simple knot. B) Cowhitch. C) Square knot. C1) Square knot variant.

Table 14.—*Net fragments from 1984 excavations in Sector I, Lo Demás. Abbreviations: Cat., catalogue number (Sandweiss, 1989: Appendix B); Su, subunit; SC, stratigraphic complex. Under Mat. (material): C, cotton; VF, vegetal fiber. Under Twist: z-S, Z-spun, S-plied; s-Z, S-spun, Z-plied. Thick., thickness of yarns in mm. Under Knot: A, simple knot; C and C1, square knot (two variants) (*see *Fig. 45). No. Knots, number of knots preserved on specimen. No. Mesh, number of complete, preserved meshes on specimen. Σ4, sum of four sides of complete mesh in centimeters. Data from DiAnderas (personal communication, 1985).* [a,b,d,e] *Fragments of the same net.* [c] *One example of each square knot variant.*

Cat.	Su	SC	Mat.	Twist	Thick.	Knot	No. Knots	No. Mesh	Σ4
396[a]	3A	D	VF	z-S	0.8–1.0	A	33	4	4.0
396[a]	3A	D	VF	z-S	1.0	A	4	0	
801	2C/4D	D	VF	z-S	1.5	A	1	0	
1294	4B	D	VF	z-S	1.0	A	1	0	
991	3B	C	VF	z-S	1.6	A	1	0	
991	3B	C	VF	z-S	1.6	A	1	0	
991	3B	C	VF	z-S	1.0	A	4	0	
991	3B	C	VF	z-S	1.0	A	3	0	
991	3B	C	VF	z-S	1.0	A	2	0	
991	3B	C	VF	z-S	1.0	A	2	0	
991	3B	C	VF	z-S	1.0	A	2	0	
1030	3D	C	VF	z-S	1.2–1.3	A	6	0	
1031[b]	3D	C	VF	z-S	1.0–1.3	A	39	6	6.0
1031[b]	3D	C	VF	z-S	1.0	A	6	0	
1031[b]	3D	C	VF	z-S	0.8–1.0	A	4	0	
1031[b]	3D	C	VF	z-S	1.0–1.2	A	3	0	
1031[b]	3D	C	VF	z-S	1.0	A	2	0	
1031[b]	3D	C	VF	z-S	1.0	A	2	0	
1031[b]	3D	C	VF	z-S	0.8–1.0	A	3	0	
1031[b]	3D	C	VF	z-S	1.0	A	1	0	
1031[b]	3D	C	VF	z-S	1.0–1.1	A	2	0	
1031[b]	3D	C	VF	z-S	1.0–1.2	A	5	0	
1031[b]	3D	C	VF	z-S	?	A	1	0	
1253	2A	C	VF	z-S	1.2	A	8	0	
1051	1A	B	VF	z-S	1.0	A	4	0	
1051	1A	B	VF	z-S	1.0	A	3	0	
1051	1A	B	VF	z-S	1.0	A	1	0	
1051	1A	B	VF	z-S	1.0	A	1	0	
1051	1A	B	VF	z-S	1.0	A	1	0	
1470	3B	B	VF	z-S	1.4	A	1	0	
1502	3B	B	VF	z-S	1.0	A	30	3	6.5
1502	3B	B	VF	z-S	1.0	A	10	0	
1502	3B	B	VF	z-S	1.0	A	7	1	6.0
1502	3B	B	VF	z-S	1.0	A	8	0	
1502	3B	B	VF	z-S	1.0	A	8	0	
1502	3B	B	VF	z-S	1.0	A	8	0	
1502	3B	B	VF	z-S	1.0	A	7	0	
1502	3B	B	VF	z-S	1.0	A	4	0	
1502	3B	B	VF	z-S	1.0	A	3	0	
1502	3B	B	VF	z-S	1.0	C, C1[c]	2	0	
1534[d]	3B	B	VF	z-S	1.0	A	6	0	
1534[d]	3B	B	VF	z-S	1.0	A	7	0	
1534[d]	3B	B	VF	z-S	1.0	A	4	0	
1534[d]	3B	B	VF	z-S	1.0	A	4	0	
1534[d]	3B	B	VF	z-S	1.0	A	2	0	
1534[d]	3B	B	VF	z-S	1.0	A	2	0	
1534[d]	3B	B	VF	z-S	1.0	A	3	0	
1534[d]	3B	B	VF	z-S	1.0	A	4	0	
1534[d]	3B	B	VF	z-S	1.0	A	2	0	
1534	3B	B	VF	z-S	1.0	A	4	0	
1534	3B	B	VF	z-S	1.2	A	1	0	
1535	3B	B	VF	z-S	1.3	A	4	0	
1535	3B	B	VF	z-S	1.3	A	2	0	
1562	3D	B	VF	z-S	1.6–1.7	A	2	0	

Table 14.—*Continued.*

Cat.	Su	SC	Mat.	Twist	Thick.	Knot	No. Knots	No. Mesh	Σ4
1565	3D	B	VF	z-S	1.6	A	2	0	
1742[e]	2B	B	C	z-S	0.9–1.6	A	54	29	4.0
1742[e]	2B	B	C	z-S	0.9–1.6	A	47	20	4.0
1766	2B	B	VF	z-S	1.8	A	2	0	
1766	2B	B	VF	z-S	1.3	A	1	0	
1768	2B	B	VF	z-S	1.0	A	4	0	
1768	2B	B	VF	z-S	1.0–1.5	A	3	0	
1768	2B	B	VF	z-S	1.5	A	2	0	
1768	2B	B	VF	z-S	1.0	A	1	0	
1768	2B	B	VF	z-S	1.3	A	1	0	
1804	4B	B	C	s-Z	2.0	A	1	0	
1804	4B	B	C	s-Z	2.0	A	1	0	
1812	2D	B	VF	z-S	0.8–1.0	A	1	0	
1813	2D	B	VF	z-S	0.8–1.0	A	1	0	

Summary by Stratigraphic Complex

Complex D: three fragments from two different nets; all simple knots, all vegetal fiber, all Z-spun, S-plied; one example with whole mesh, Σ4 sides = 4.0 cm.

Complex C: 20 fragments from ten different nets; all simple knot, all vegetal fiber, all Z-spun, S-plied; one example with whole mesh, Σ4 sides = 6.0 cm.

Complex B: 44 fragments from 35 different nets; 43 fragments with simple knot, one fragment with two variants of square knot; 40 fragments of vegetal fiber and Z-spun, S-plied yarns; four fragments of cotton, two with S-spun, Z-plied yarns and two with Z-spun, S-plied yarns; four examples with whole mesh, Σ4 = 6.5 cm, 6.0 cm, and 4.0 cm (two examples from same net).

knots were made of vegetable fiber, while the other two knot types included both vegetal fiber and cotton examples.

The context and nature of the net fragment occurrences in Lo Demás Sector I are consistent with a traditional pattern of net use still employed in Tambo de Mora. On days or at times when they are not fishing, the fishermen sit on the street in front of their houses repairing their nets with a tool kit that includes *malleros* (Fig. 46). Each broken segment of net is excised and discarded in the street. The result is an accumulation of net fragments with

Table 15.—*Traditional net measurements from Peru, adapted from Coker (1908–II, 1980–VII). Plana, Cuadrada, and Σ4 Sides are measured in cm. Names of the nets refer to the fish species for which they are intended. The information on all nets except the* anchovetera *is from a table (Coker, 1908–II:58) for gill nets. The line in the table for the* anchovetera *net is drawn from a later section of Coker's work (1908–VII:105), in which he describes an* anchovetera *from the Chilca area as having a mesh of "1½ centímetro (3¼ centímetros el cuadrado) y menos." Because the first measurement must be plana (the only measurement in cm used by Coker other than cuadrado), the cuadrado measurement must mean "three quarters." Coker describes the* anchovetera *as a very small mesh "chinchorro" (beach seine with wings and bunt, Spoehr, 1980:23) used from canoes.*

Name	Dedo	Plana	Cuadrada	Σ4 Sides
anchovetera	?	1.5	0.75	3
pejerreyera	1	3–4	1.5–2	6–8
cabincera	3	6	3	12
licera/bonitera	4	8–10	4–5	16–20
bonitera corvinera	7	14–15	6.5–7.5	28–30
corvinera	8	12–18	8–9	32–36
robalera	9	18–20	9–10	36–40

Table 16.—*Net fragments from the 1983 excavations in Sector I, Lo Demás. Data from Fattorini (1984). Abbreviations: Complex, stratigraphic complex in Sector I; Cat., catalogue number (Sandweiss, 1989:Appendix B). Under Material: C, cotton; VF, vegetal fiber. Under Knot Type: A, simple knot; B, cow hitch; C, square knot (*see *Fig. 45).*

Cat.	Subunit	Complex	Material	Knot Type
14	A2	D	C	C
17	A1	D	VF	B
17	A1	D	VF	B
17	A1	D	VF	B
18	A2	D	VF	C
19	A2	D	VF	?
19	A2	D	C	B
20	A2	D	C	A
20	A2	D	C	A
20	A2	D	C	A
22	A1	D	VF	B
37	C3	D	A	B
42	B3	D	VF	B
44	B3	C	C	B
48	A1	C	VF	C
48	A1	C	C	B
52	A2	C	VF	A
113	B3	C	VF	B

Fig. 46.—Fisherman repairing nets in the principal street of Tambo de Mora, 1984. Note excised net fragments discarded in the street.

few whole meshes, similar to the net fragments from the excavations at Lo Demás.

Textiles

Textile fragments and especially threads were a common constituent of the excavated deposits at Lo Demás. Thus far, only the sample from the 1983 excavation in Sector I has been studied in detail (Fattorini, 1984); observations on the 1984 sample consist only of noting the presence of at least one complete piece, an undecorated belt, and a number of fairly large fragments in addition to the usual small fragments and threads. Studies on the woven items in the Uhle Chincha collection (O'Neale and Kroeber, 1930; O'Neale et al., 1949; Garaventa, 1979) provide some comparative data on late pre-Hispanic Chincha textiles.

Table 17.—*Loose threads by material from 1983 excavation in Sector I, Lo Demás, by stratigraphic complex. Stratigraphic Complex B was not present in the 1983 excavation subunits (see Chapter 5). Data from Fattorini (1984).* [a] *Two of the wool threads were dyed red and found together in Subunit A2, level 2d, cat. 19.* [b] *Seven of the vegetable fiber threads came from the same context, Subunit A2, level 3bii, cat. 52.*

Complex	Cotton	Wool	Veg. Fiber	Total
D	59	4[a]	0	63
C	52	1	8[b]	61
A	3	0	0	3
Total	114	5	8	127

Graciela Fattorini (Instituto Nacional de Cultura, Lima) studied the textiles from the 1983 excavation at Lo Demás. The study sample consists of 127 loose threads and 42 fragments of cloth (Fattorini, 1984). Most (89.9%) of the loose threads (Table 17) and all but one of the textile fragments (Table 18) are cotton. The exceptions are five wool threads, eight vegetal fibers, and one decorated wool textile fragment (Fig. 47, discussed in detail below).

All of the textile fragments in the 1983 sample from Lo Demás are plainweaves, most commonly with paired warps and single wefts (Table 18). Similarly, O'Neale et al. (1949:13) found that paired warps crossed by single wefts characterized the majority of specimens (62 out of 112) in the sample of late pre-Hispanic Chincha textiles excavated by Uhle.

Selvages are present on ten of the Lo Demás specimens. Four fragments have stitches, either where the pieces had been attached to other cloths or where rips had been mended. Three specimens have patches. O'Neale et al. (1949:141) found 11 patched specimens in the Uhle Chincha collections; they note that the "standards [of the mender] were much below those held by the weaver." Fattorini (1984) makes a similar observation concerning the Lo Demás patched textiles.

The only textile made of wool (both warps and wefts) is also the only decorated cloth from the 1983 collection (Fig. 47; Table 18:cat. 84). Torn on three sides, this fragment is a weft-faced plainweave with a chained warp selvage on the one untorn edge (M. Young, personal communication, 1988). Decoration consists of weft stripes in red, blue-purple, and

Table 18.—*Textile fragments from 1983 excavation in Sector I, Lo Demás. Data from Fattorini (1984). Abbreviations: Cat., catalogue number (Sandweiss, 1989:Appendix B); SC, stratigraphic complex. Under Mat. (material): C, cotton; W, wool. Wp, warp; Wf, weft. Dimensions in cm.*

Cat.	SC	Mat.	Dimensions	Wp/cm²	Wf/cm²	Remarks
7	D	C	2.0 × 3.1	27	16	warp-predominant plainweave
9	D	C	6.5 × 4.8	19	11	warp-predominant plainweave
12	D	C	1.6 × 2.2	11	14	plainweave
13	D	C	1.6 × 2.5	19	16	plainweave
15	D	C	4.3 × 1.6	14	23	plainweave
17	D	C	5.8 × 3.3	24	11	warp-predominant plainweave
17	D	C	6.1 × 3.0	25	14	warp-predominant plainweave
17	D	C	15.8 × 11.5	27	14	warp-predominant plainweave
17	D	C	30.0 × 15.5	27	14	semi-basket plainweave, 1 selvage, loom cords
19	D	C	2.6 × 6.8	32	13	warp-faced plainweave, 1 selvage
19	D	C	2.6 × 6.2	33	16	warp-predominant plainweave
20	D	C	19.8 × 32.0	29	16	warp-predominant plainweave w/stitching
22	D	C	45.0 × 20.0	29	16	warp-predominant plainweave, 2 selvages
31	D	C	5.3 × 7.0	18	14	plainweave
32	D	C	4.8 × 5.7	23	12	warp-predominant plainweave
43	D	C	2.8 × 2.7	7	15	weft-predominant plainweave
43	D	C	29.3 × 25.0	24	11	warp-predominant plainweave, 2 selvages, patches and stitching
71	D	C	2.5 × 1.2	18	6	warp-predominant plainweave
79	D	C	1.7 × 0.8	18	7	semi-basket plainweave
82	D	C	4.4 × 2.0	?	?	plainweave
93	D	C	12.0 × 13.7	19	14	warp-predominant plainweave, 1 selvage, stitching along 1 edge
94	D	C	8.5 × 2.6	12	8	warp-predominant plainweave
94	D	C	5.4 × 4.7	20	14	warp-predominant plainweave, 1 selvage
27	C	C	3.5 × 4.7	21	13	warp-predominant plainweave, 1 stitch
44	C	C	5.6 × 10.3	29	17	warp-predominant plainweave
45	C	C	7.2 × 3.0	26	12	warp-predominant plainweave
46	C	C	2.3 × 1.9	11	8	plainweave
48	C	C	3.6 × 2.1	14	9	plainweave
51	C	C	2.9 × 2.7	27	20	plainweave
52	C	C	6.8 × 7.5	21	12	warp-faced plainweave, 1 selvage, stitching
52	C	C	9.3 × 13.0	40	27	warp-predominant plainweave, 1 selvage
54	C	C	4.7 × 4.3	20	38	weft-predominant plainweave, 1 selvage, 2 patches
59	C	C	14.0 × 9.8	30	17	warp-predominant plainweave, 1 selvage w/paired warps, 4 patches
84	C	W	14.5 × 3.6	14	26	weft-faced plainweave w/chained warp selvage, decorated w/stripes in red, blue-purple, and yellow on brown
91	C	C	4.8 × 2.6	?	?	plainweave
91	C	C	2.1 × 1.5	?	?	plainweave
91	C	C	2.0 × 2.4	?	?	plainweave
91	C	C	2.5 × 4.5	?	?	plainweave
91	C	C	2.6 × 4.1	?	?	plainweave
91	C	C	2.2 × 3.5	?	?	plainweave
101	C	C	5.9 × 2.0	20	14	warp-predominant plainweave
131	A	C	4.9 × 7.4	25	14	warp-faced plainweave, 1 selvage

yellow on a brown background. Striping is the "only colored decoration on the Chincha domestic cloths" from the Uhle Chincha collections (O'Neale et al., 1949:141). According to O'Neale et al. (1949:142),

> "No specimen in the Chincha plain-weave group has stripes showing more than three colors, exclusive of the color of the ground material. The ground color is usually neutral and may originally have been white or brown. The most frequently occurring color in the stripes is brown, followed by blue. Red and rose occur only twice."

The striped wool textile from Lo Demás fits this description quite well, especially if the yellow stripe may be considered as light brown.

O'Neale et al. (1949) deal only with the cotton plainweaves, and they do not differentiate their sample chronologically by associated ceramics; thus, their

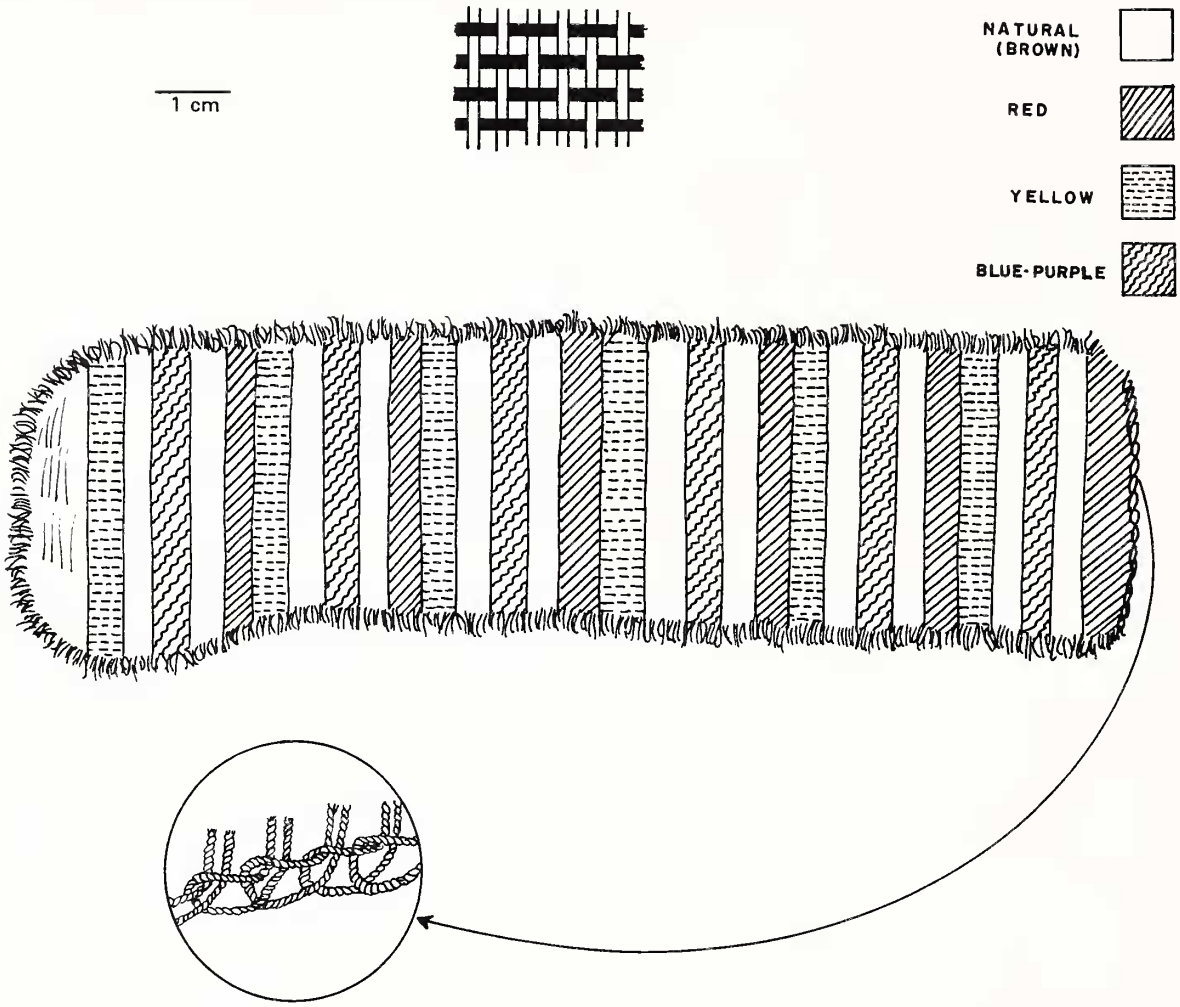


Fig. 47.—Striped, wool textile fragment, weft-faced plainweave with chained warp selvage, from Lo Demás, Sector I, Subunit A2, feature 18a, Stratigraphic Complex C (cat. 84). *See* Table 18.

textile study does not aid in analyzing the wool piece from Lo Demás. Garaventa (1979) does describe wool textiles from the Uhle Chincha collections, although her sample includes only those specimens from graves assigned to Menzel's (1966) Chincha style (Late Intermediate Period 8/early Late Horizon). Four of the 13 textiles studied by Garaventa are made entirely of wool, while others have a wool warp or weft, or wool brocading. The all-wool pieces "include belts, a bag, and a neckpiece" (Garaventa, 1979:229). One of these specimens, a bag, is a weft-faced plainweave, like the Lo Demás wool textile (Garaventa, 1979:220, 229–230 and Fig. 7); decoration consists of stripes in four shades of brown and cream. Unlike the Lo Demás piece, the stripes on the bag vary in width. The bag comes from Uhle's (1924) Cemetery B (PV 57–6), 50 m east of Sector I of Lo Demás (*see* Figs. 1 and 3).

Until an analysis of wool textiles from the Chincha graves with Inka associations is available, the chronological significance of the Lo Demás wool fragment is limited to the observation that the piece is similar to other late pre-Hispanic examples from the same area.[76] The undecorated cotton fragments also concord with the Uhle sample of late pre-Hispanic textiles in terms of material, technique, and condition.

Spinning and Sewing Equipment

Although only two possible items of weaving equipment were found in excavations of Sectors I and IV at Lo Demás (the wooden and bone "ruqquis"), spinning and sewing equipment was fairly common, as were cotton bolls and seeds (*see* Chapter 10). Spinning implements included both spindle whorls and spindles, while sewing equip-

ment consisted of caetus spine and bone needles. Loose threads were abundant, but most probably came from disintegrating textiles (*see above*, section on Textiles). Although several balls or shanks of thread were recovered from looters' backdirt in Sector II, we found none in Sectors I and IV. Some of the analyzed textiles from the 1983 excavations in Sector I were patched, probably at Lo Demás.

Spindle Whorls

Twenty-three whole or fragmentary spindle whorls were recovered from Sectors I and IV in Lo Demás (Table 19). Of these specimens, 19 came from Sector I (evenly distributed between Stratigraphic Complexes B to D) and four came from Sector IV. Table 19 presents provenience and hole diameter, height, and maximum width for the whorls.[77] Only six specimens are complete, so not all dimensions could be measured in all cases. Based on the available measurements, the mean whorl height is 1.29 cm (SD = 0.23 cm), the mean hole diameter is 0.37 cm (SD = 0.03 cm), and the mean maximum width is 1.46 cm (SD = 0.20 cm). For the five specimens for which all three dimensions are available, the mean ratio of height to maximum width is 0.94 (SD = 0.13), the mean ratio of hole diameter to height is 0.28 (SD = 0.04), and the mean ratio of hole diameter to maximum width (including a sixth measurement) is 0.26 (SD = 0.06). In qualitative terms, the Lo Demás spindle whorls tend to be roughly spherical with a cylindrical hole about one quarter the diameter of the sphere. Only one specimen, a painted fragment from Sector IV, has any decoration (Table 19:cat. 1765).

Table 19.—*Spindle whorls from excavations in Sectors I and IV, Lo Demás. Abbreviations: Cat., catalogue number (Sandweiss, 1989:Appendix B); SC, stratigraphic complex (Sector I); Lv, Level (Sector IV, Subunit 26D); Hole D., hole diameter; Max. Width, maximum width. Under Condition: W, whole; ~W, mostly whole; F, fragment. A question mark indicates that a measurement could not be taken because of poor preservation. Measurements are in cm.* [a] *Still attached to spindle;* see *Table 20: cat. 1028.* [b] *Pulverized.* [c] *Painted.* [d] *Broken in two.*

Cat.	SC	Lv	Hole D.	Height	Max. Width	Condition
			Sector I			
550	D		?	1.4	?	F
561	D		0.4	1.3	1.4	W
567	D		0.4	1.3	1.1	W
829	D		0.4	?	?	F
1069	D		?	1.3	?	F
1254	D		?	?	?	F
872	C		?	1.1	?	F
1074	C		0.4	?	1.5	~W
1082	C		?	?	?	F[a]
1104	C		?	1.6	?	F
1215	C		?	1.4	?	F
1408	C		0.4	1.2	1.5	W
1500	C		?	1.2	?	F
1089	B		?	1.3	?	F
1120	B		?	1.4	?	F
1352	B		?	1.4	?	F
1389	B		0.4	1.5	1.7	W
1797	B		?	?	?	F[b]
1855	B		?	?	?	F
			Sector IV			
1765		7b	?	?	?	F[c]
1851		13b	0.3	1.5	1.5	W[d]
1854		15	?	1.0	?	F
1874		17	?	?	?	F

Uhle (1924) recovered a number of spindles and whorls from late pre-Hispanic graves in Chincha. Kroeber and Strong (1924:32–33 and Plates 16–18) briefly discuss and illustrate these artifacts, dividing them into Late Chincha I and Late Chincha II/Inka types based on associated diagnostic pottery and other artifacts. The Lo Demás spindle whorls fit the description of Late Chincha I (= pre-Inka Chincha style, Menzel, 1966) form as "more or less spherical" (Kroeber and Strong, 1924:32); the Late Chincha II/Inka types have varied forms but are "rarely spherical" (Kroeber and Strong, 1924:33). However, the Late Chincha I whorls tend to be made of highly polished black pottery, usually incised and sometimes painted, while the Late Chincha II/Inka whorls are "made of very poorly baked pottery, unpolished and not incised [and a] number of them have split or crumbled off the spindle" (Kroeber and Strong, 1924:32–33). The Lo Demás whorls are closer to the Late Chincha II/Inka types in that they are often broken, are not incised, and are not blackware. The combination of Late Chincha I form and Late Chincha II/Inka manufacture suggests a synthesis of the two traditions, and further supports the Late Horizon date for Lo Demás.

Needles and Spindles

We recovered 38 whole or fragmentary needles and spindles from excavations in Sectors I and IV of Lo Demás, 26 from Sector I and 12 from Sector IV (Table 20). All but four of the specimens are made of cactus spine; the exceptions are three bone needles and one wooden object which may be a spindle.

Differentiating between needles and spindles often presented a problem, given the fragmentary nature of most specimens. Both classes of artifacts are long and relatively narrow. Needles and spindles

Table 20.—*Needles and spindles from excavations in Sectors I and IV, Lo Demás. Abbreviations: Cat., catalogue number (Sandweiss, 1989:Appendix B); SC/lv, stratigraphic complex (Sector I)/level or feature (Sector IV); Max. Width, maximum width. Under Material: cactus, cactus spine. Under Part: N, complete needle (with point and hole); NFH, needle fragment with hole; NFP, needle fragment with point; NF, needle fragment without hole or point; SFP, spindle fragment with point; SF, spindle fragment without point; +C, ceramic around shaft (probably broken whorl); +P, painted. All measurements are in cm.* [a] *Broken at the hole.* [b] *This specimen is cylindrical, with the center carved out, several hairs wrapped around one end, and dark thread around the other. If it is a spindle, it is unlike the others found in Lo Demás and in the graves excavated by Uhle (1924; Kroeber and Strong, 1924).* [c] *This specimen has several areas of red paint.* [d] *This specimen has traces of pink paint.*

Cat.	SC/lv	Length	Max. Width	Material	Part
			Sector I		
343	D	2.9	0.1	cactus	NFP
370	D	2.0	0.3	bone	N
440	D	6.9	0.1	cactus	NFP
480	D	3.0	0.1	cactus	NFH
527	D	8.1	0.2	cactus	NFP
600	D	4.3	0.1	cactus	NF
600	D	5.0	0.1	cactus	NFP
700	D	3.5	0.1	cactus	NFH
829	D	5.5	0.2	cactus	NFP
929	D	6.0	0.3	cactus	SFP
995	D	5.7	0.2	cactus	NF
1260	D	2.5	0.1	cactus	NFP
484	C	5.1	0.2	cactus	NFP
837	C	5.2	0.1	cactus	NFH
837	C	5.8	0.1	cactus	NFP
858	C	4.0	0.1	cactus	NFP
872	C	2.9	0.1	cactus	NFH[a]
1028	C	9.5	4.0	cactus	SFP+C
1055	C	7.6	0.1	cactus	NFH
1425	C	16.0	0.7	wood	SF(?)[b]
1608	C	8.4	0.1	cactus	NFP
1391	B	8.3	0.4	cactus	SF+P[c]
1534	B	5.5	0.1	cactus	N
1683	B	9.7	0.4	cactus	SFP
1819	B	3.7	0.2	cactus	NFP
1847	B	3.4	0.2	cactus	NFP
1681	2	6.0	0.1	cactus	NFP
1739	5ci	14.1	0.5	cactus?	SFP+P[d]
1743	5c	4.6	0.1	cactus	NFP
1765	7b	4.2	0.2	cactus	NF
1788	f.2603i			bone	N
1800	10	3.5	0.2	cactus	NFP
1839	12d	3.4	0.2	cactus	NFP
1851	13b	7.0	0.2	bone	NFP
1851	31b	12.6	0.1	cactus	NFP
1854	15	3.0	0.2	cactus	NF
1854	15	4.5	0.3	cactus	SF
1854	15	11.0	0.3	cactus	SF

both have at least one pointed end, but only needles have holes. All six specimens with holes are only one mm in maximum width, so narrow width is potentially diagnostic of needles. Spindles must be wide enough at their maximum width so that the whorl will not fall off. Whorls from Lo Demás average 0.4 cm in hole diameter, with the smallest hole measuring 0.33 cm. Therefore, it is reasonable to assume that spindles at Lo Demás should have a maximum width greater than 0.3 cm. Whereas this criterion serves to indicate that all *complete* specimens with a maximum diameter of 0.3 cm or less are probably not spindles, it is of limited utility in assigning function to the fragments from the Lo Demás excavations. Conversely, however, widths equal to or greater than 0.3 cm would be awkward for needles, and most specimens—even fragmentary—fitting this description are probably spindles. In fact, the three specimens from Lo Demás which can be identified as spindles using other criteria measure 0.4 or 0.5 cm in maximum width. Therefore, I have tentatively classified all specimens with a maximum width of 0.3 cm or greater as spindles and those with an average width of less than 0.3 cm as needles (Table 20) (*see* Sandweiss, 1989:340, footnote 191).

I can identify three specimens as definite spindles due to the presence of an eroded spindle whorl on one (Table 20:cat. 1028, Sector I, Stratigraphic Complex C) and paint on the other two (Table 20: cat. 1391, Sector I, Complex B; cat. 1739, Sector IV, Subunit 26D, level 26–5ci). Kroeber and Strong (1924:32) describe Late Chincha I spindles from Uhle's Chincha collections as "painted little or not at all," while the "Inca spindle . . . normally has some 7 or 8 cm. of its middle length painted, sometimes in as many as five colors: yellow, green or blue, white, blaek, and red." The presence of red and pink pigment on the two specimens from Lo Demás fits the later, Inka tradition.

Four of the specimens covered in this section require further discussion. The bone needles from Sector I, Stratigraphic Complex D (Fig. 48a and Table 20:cat. 370) and from feature 2603i in Subunit 26D, Sector IV (Fig. 48b and Table 20:cat. 1788) could not have been used for ordinary cloth—the epiphyses are too wide. These specimens may have been used as netting needles. The presence of a bone object resembling a *mallero* in the same provenience (Fig. 52 and Table 24:cat. 1788) as the Sector IV bone needle supports the netting needle interpre-

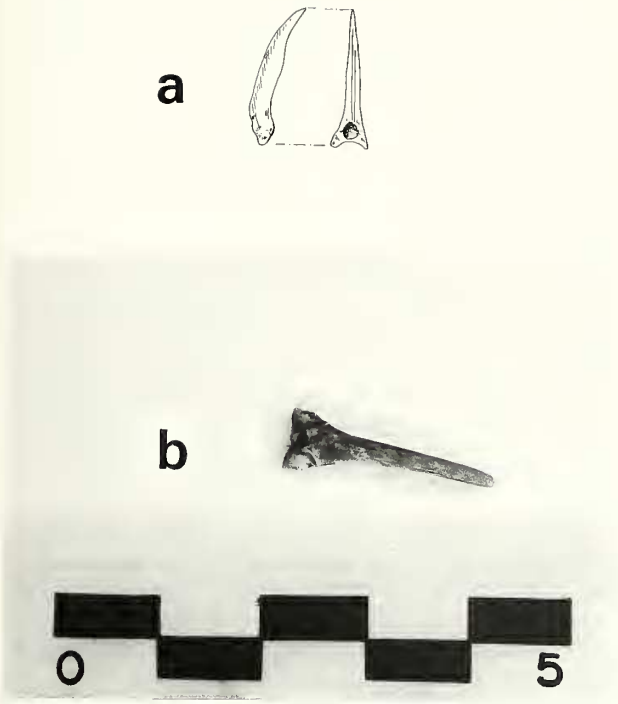


Fig. 48.—Bone needles from Lo Demás. a) From Sector I, Subunit 2D, feature 213, Stratigraphic Complex D (cat. 370). Scale is 1:1. b) From Sector IV, Subunit 26D, feature 2603i (cat. 1788). See Table 20.

tation. The other bone needle from Subunit 26D, level 26–13b (Table 20:cat. 1851) is long, slender, and slightly curved. This object would work well as a cloth needle.

The wooden object from Sector I, Stratigraphic Complex C (Table 20:cat. 1425) is certainly not a needle and may not be a spindle, either. This specimen is cylindrical and relatively wide; the center is carved out, a dark line circles one end, and a few hairs are wrapped around the other end. Both ends appear broken, and I can assign no function to this piece.

Despite the problems in distinguishing between needles and spindles in many cases, the definite identification of some examples in each of these artifact categories indicates that both spinning and sewing took place at Lo Demás. Definite spindles are present in both Sector I and Sector IV; although definite needles were not found in Sector IV, the curved bone almost certainly served that function, and several of the other specimens from this sector are sufficiently long and narrow to be classified as needles. Thus, both spinning and sewing took place in both the common and elite sectors of the site. To the degree that some of the spindles fit Kroeber and Strong's (1924:32) definition of Inka period spindles, this artifact category supports the analyses of other materials which indicate that the Uhle collections do not contain two chronologically distinguishable units.

Sandal

One piece of footgear, a sandal, was recovered from Stratigraphic Complex D in Sector I (Fig. 49). The sole is made of coiled vegetal fiber rope. The sole has a maximum width of 12.5 cm near the toe and tapers towards the heel to a width of 8.5 cm. The maximum length is 18 cm, but the heel is worn out, and the original length was somewhat greater. The straps are made of braided wool yarns of tan-yellow, dark brown, and what seems to have been a dark blue.

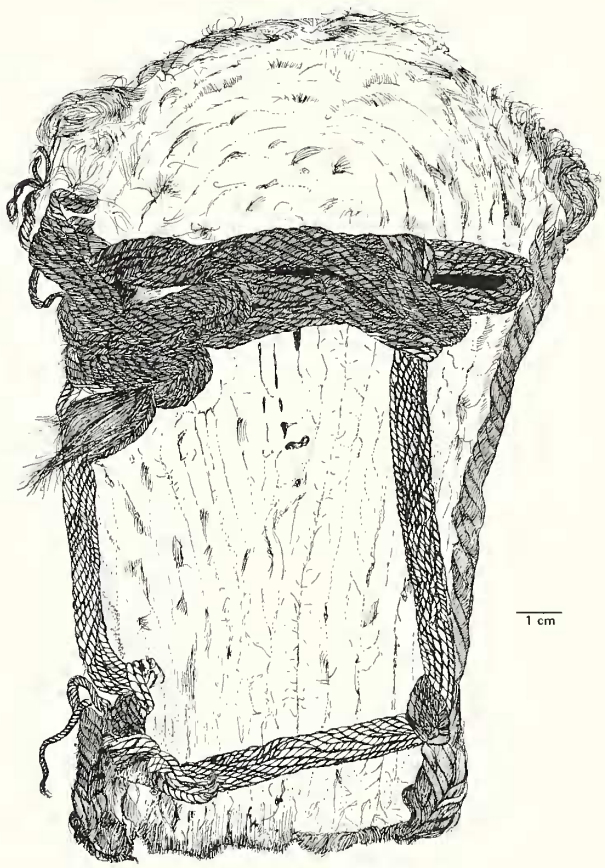


Fig. 49.—Vegetal fiber and wool cord sandal from Lo Demás, Sector I, Subunit 4C, level 7i, Stratigraphic Complex D (cat. 1069).

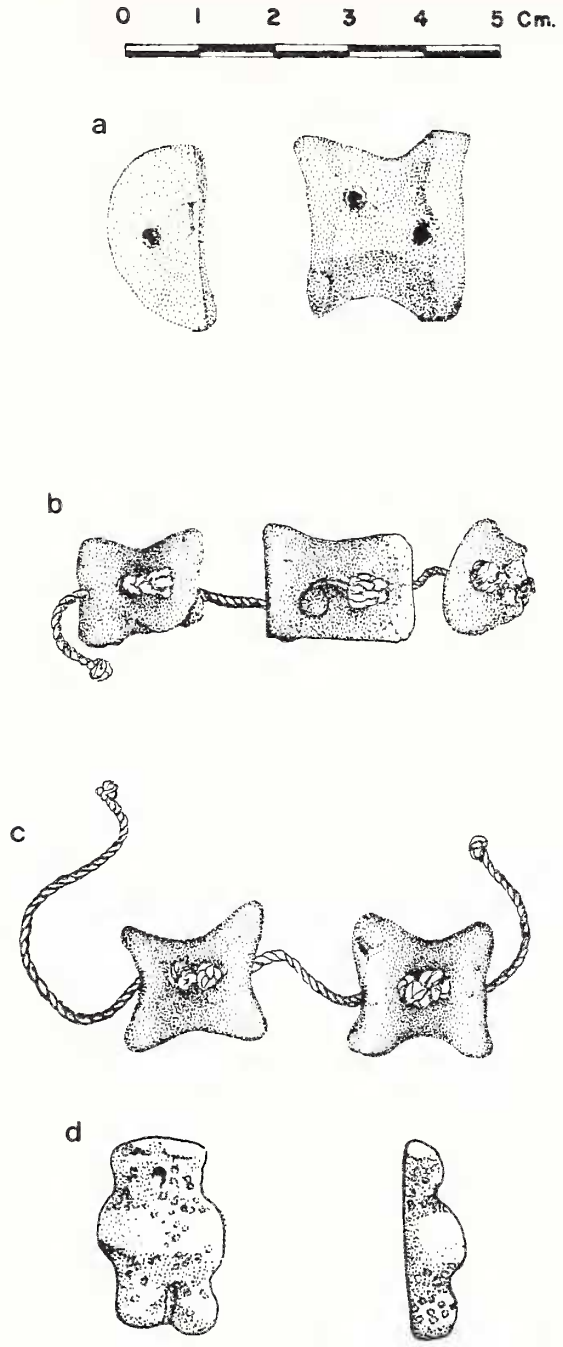


Fig. 50.—Half-bobbin objects made of clay. a) From the Ranchería site (PV 57–14) near Lurinchincha (*see* Fig. 1). b) and c) From Lo Demás, Sector IV, Subunit 26D, level 5 (cat. 1726). d) From Lo Demás, Sector IV, Subunit 26D, level 13 (cat. 1841). See Table 21 for b, c.

Mejía Xesspe (1975–1976:30–31 and Figs. 6 and 7) describes this type of sandal, his Type E, as

> "the true *llanke* that was used among the peoples of the coast and the interandean valleys. The material used for the llanke was cotton and *maguey* or *cabuya* yarns and cords. The straps were of the same material or in some cases of polychrome wool yarn, particularly for feminine use."

Of the two *llankes* illustrated by Mejía Xesspe, one (Mejía Xesspe 1975–1976:Fig. 6) is nearly identical to the Lo Demás sandal. This specimen was excavated by Max Uhle in 1906 from a late pre-Hispanic grave in the Rinconada de Ate site, Lima valley (Mejía Xesspe, 1975–1976:31). All of the archaeological examples of footgear from Peru (representations as well as the actual objects) diseussed by Mejía Xesspe (1975–1976:28, 33, 37–38) date to the Late Horizon. His analysis of the drawings of Guaman Poma de Ayala found two types of footgear represented; of these, one is the *llanke,* seen only in association with people of Inka affiliation (Mejía Xesspe, 1975–1976:37).

The "Aviso" document lists *zapateros* (shoemakers) among the artisans of the Inka empire; some made very fine footgear specially for the Inka. However, these *zapateros* made their products of leather rather than fiber ("Aviso," Rostworowski, 1970: 168). Rostworowski (1977:245) mentions both shoemakers ("alpagateros") and sandalmakers for the north coast (*see* Chapter 2).

In his excavations at Chincha, Max Uhle found one rawhide sandal and "6 pairs of sandals, woven, twined, or sewn 5-strand braid" (Kroeber and Strong, 1924:51). Unfortunately, all of these examples came from the Huaca de Alvarado (PV 57–10, *see* Fig. 1), a late Formative Period structure with intruded Chincha style and post-Chincha assemblage graves; even in 1901, looting had disturbed the burials so much that the exact affiliation of any material could not be determined.

Half-bobbin Objects

A test pit in the Ranchería site (PV 57–14), dug in March of 1984, produced several specimens of an unusual artifact type shaped like half-bobbins. This puzzling type had not appeared during the 1983 test excavation at Lo Demás, but 19 whole or fragmentary specimens were found there in the 1984 excavations in Sectors I and IV, and one was picked up from the surface of Sector I. An additional specimen came from the excavation in Sector II, and another from a surface collection at a bluff-top site to the north of Lo Demás (Vivanco, 1987:122). All of the "half-bobbin" objects from Lo Demás and Ranchería are made of clay, while the surface find from the Chineha bluff-top site is bone. Other specimens are reported from two late pre-Hispanic

Table 21.—*Half-bobbin objects from excavations in Sectors I and IV, Lo Demás. Abbreviations: Cat., catalogue number (Sandweiss, 1989:Appendix B); SC, stratigraphic complex (Sector I); Lv, level (Sector IV, Subunit 26D); Mn, minimum; Mx, maximum; Ct, center; Bs, base; H, height; W, width; L, length; Hls, holes (average diameter of preserved openings); Cd., condition (W, whole; ~W, mostly whole; F, fragment). A question mark indicates that a measurement could not be taken because of poor preservation. All measurements are in cm.* [a] *These three specimens are linked together by segments of cotton string pulled through each hole and knotted; the first of the three is mostly destroyed but still attached. Hole diameter could not be measured because the strings filled the holes.* [b] *These two specimens are linked to each other by segments of cotton string in the same way as the previous three specimens.*

Cat.	SC	Lv	Mn H	Mx H	Ct H	Mn W	Mx W	Ct W	Mn L	Mx L	Bs L	Hls	Cd.
						Sector I							
265	D		1.0	0.8	0.6	?	?	1.3	?	1.1	?	0.13	~W
593	D		0.9	0.9	0.6	1.7	1.7	1.2	1.7	1.7	1.5	0.13	W
608	D		?	?	0.8	?	?	1.4	?	?	2.0	0.18	~W
1029	C		1.1	?	?	1.6	?	?	?	?	?	0.13	~W
1427	C		1.4	?	0.8	2.3	?	1.2	?	?	?	0.15	F
1690	C		1.0	1.0	0.7	2.0	1.9	1.4	1.9	1.9	1.8	0.19	W
1690	C		1.1	0.9	0.8	1.8	1.6	1.3	1.8	1.9	1.7	0.23	W
1690	C		1.2	1.1	0.9	1.8	1.7	1.4	2.0	2.0	1.9	0.13	W
1056	B		1.1	0.9	0.7	1.7	?	1.4	?	2.0	1.9	0.20	~W
1534	B		1.1	?	?	?	?	?	?	?	?	0.14	F
1621	B		?	?	?	?	?	?	?	?	?	?	F
1767	B		?	?	?	?	?	?	?	?	?	?	F
Surface			0.9	?	0.7	1.8	1.6	1.1	?	1.3	?	0.17	~W
						Sector IV							
1726		5	?	?	?	?	?	?	?	?	?	?	F[a]
1726		5	?	?	0.7	?	?	1.3	?	?	1.8	?	W[a]
1726		5	0.8	?	?	1.5	?	?	?	?	?	?	W[a]
1726		5	1.1	1.1	0.7	1.8	?	1.2	?	1.9	1.4	?	W[b]
1726		5	1.1	1.1	0.7	1.8	1.7	1.3	1.9	1.9	1.6	?	W[b]
1737		5b	1.1	?	0.7	?	?	?	?	?	?	0.17	F
1841		13	(variant of normal model; *see* Fig. 50d)										W

coastal sites to the north and south of Chincha (*see below*).

A typical "half-bobbin" object is shaped like a spool of thread standing on one end and cut in half along a vertical plane (Fig. 50a–c). Taking the flat side as the base, the maximum basal width and length tend to be similar (Table 21). Because of the spool shape, however, the center is restricted, and the basal profile has an hourglass shape. The two lips are pierced with holes angled down from the interior to the exterior. All but one of the known "half-bobbin" specimens fit this description quite closely (Table 21); the one exception, from Subunit 26D, has a bulge in the middle rather than an indentation or waist (Fig. 50d).

In Sector I of Lo Demás, "half-bobbin" objects occurred in the three major stratigraphic complexes (B to D) as well as on the surface (Table 21). No provenience contained more than one specimen. In Subunit 26D, in Sector IV, however, we found two sets of articulated "half-bobbin" objects in a single provenience (Fig. 50b, c). These specimens show that the holes in the lips were used to link the "half-bobbin" objects together: a short piece of string was passed through each hole and knotted to keep it from slipping out, while the other end was passed through the hole of a different "half-bobbin" object. Once the string has been pulled tight, the separate, knotted strings (rather than a single line passed through all of the holes in the linked "half-bobbin" objects) keep the individual objects from sliding up and down.

The two other known occurrences of "half-bobbin" objects are at Quebrada de la Vaca, a Late Horizon shoreline site near Chala, about 300 km to the south of Chincha, and at Cerro Azul, the Late Intermediate Period/Late Horizon fishing site in Cañete, 57 km to the north of Chincha. At Quebrada de la Vaca, Trimborn (1985:40, Abb. A–1) found one bone "half-bobbin" object in a tomb; he illustrates this specimen as part of a reconstructed necklace, but there is no evidence that it was originally strung with the other pendants in the tomb. In a wrapped bundle at Cerro Azul, Kroeber (1937:252 and Plate LXXXVII–1) found "forty-three half-spools of hard, dark wood, probably huarango, tied

together . . . . Each spool is a ⅔ cylinder, hour-glass notched toward the middle. Each is separately strung to the next . . . a self-knot alone keeps the string from slipping out of its hole." Although differing in material, these half-spools are identical in form and method of articulation to the "half-bobbin" objects found at Lo Demás.

The function of the "half-bobbin" objects is unknown. I have found no modern objects which resemble them, and no archaeologist (or fisherman) whom I have consulted has been able to shed any light on the matter. Not even Kroeber (1937:252) could determine the function of these artifacts, despite the fact that he had the largest collection of them; he suggested "necklace or other personal adornment?" with no great conviction. Given the regularities in form, the lack of surface treatment, and the occurrence in midden as well as burials, I do not believe that the "half-bobbin" objects were used only for ornamentation.

Although the objects themselves offer no obvious clues to their function, the sites in which "half-bobbin" objects have been found suggest the range of possible uses. This artifact type occurs in late pre-Hispanic sites close to the shore and, in the cases of Lo Demás and Cerro Azul (Mareus, 1987*a*, 1987*b*; Kroeber, 1937), in sites demonstrably occupied by fishermen in the Late Horizon. Quebrada de la Vaca is similarly Late Horizon in date (Trimborn, 1985) and is situated on a cliff overlooking the shore. Given this distribution, the "half-bobbin" objects may well have something to do with fishing. What that could have been is unclear, but if the objects had a single function, it was one that could be equally well fulfilled by ceramic, bone, or wood.

Lithics

The inventory of lithic artifacts from Lo Demás is undistinguished by objects of fine craftsmanship, or indeed by any evidence of significant labor investment in stone tool production. I inspected the entire collection of lithic artifacts from Sectors I and IV (both seasons—1983 and 1984); artifacts and possible artifacts include a few grinding stones, part of one obsidian tool or preform of indeterminate original form, a small number of obsidian chips or waste flakes, and a large number of flakes struck from river or beach cobbles (*see* Table 22). Table 22 also includes pieces of polychaete worm calcareous heads, a grey, porous material resembling coral and referred to in Peru as "piedra pomez" (which it is not). Blocks of polychaete worm heads are often washed up on the beach, and they must have been brought to Lo Demás deliberately. Today, Peruvian coast-dwellers use this material for abrading, particularly for callouses. Topic (1982:164) refers to this material as "coral" and says that it was used as a rasp in woodworking shops at Chan Chan. In Sector I of Lo Demás, polychaete worm head fragments are concentrated in Complex B (25 in B, 5 in C, 3 in D; *see* Table 22), as are modified wood fragments (*see above* and Table 11). This correlation supports a woodworking function for the Lo Demás worm heads.

The collection of stone objects also included unmodified specimens such as intact cobbles (some from hearths or walls), cobble shatter, and pebbles of various sizes and shapes. Unmodified stones are not listed in Table 22. Some of these unmodified lithics might have been used as net weights. Such use is an old tradition in the Andes: Bird found 18 cord-wrapped stones in the Late Preceramic levels of Huaca Prieta (Bird et al., 1985:220 and Fig. 167); he interpreted these finds as possible fishing net sinkers. Wrapped stones are known from sites of various later periods along the Peruvian coast (e.g., Pozorski, 1982:188), and I have seen unmodified stones used as net weights and as anchors in the same area today.

Peter Kvietok (American Museum of Natural History) also reviewed the collection of cobble flakes from Lo Demás and selected the 13 most promising examples for edge wear analysis (Kvietok, 1988). The flakes came from cobbles composed of at least six different types of rock, all common to the Peruvian coast. Eight of the specimens (Table 23)

> "had observable use wear patterns that can be categorized into two different types. 1—Edge crushing with or without microstep fractures that is localized to relatively few areas and is limited in areal extent. 2—Edge blunting with contiguous surface smoothing. The smoothing is often more extensive on one side of the tool than on the other" (Kvietok, 1988).

Kvietok (1988) interprets the Type 1 wear as "the result of direct hammering or crushing of the stone tool against a hard or unyielding material," while he sees Type 2 wear as "probably the result of working a pliable yet firm material in a continuous sweeping/shaving/scaling/cutting motion." The first pattern would result from working a material sueh as wood; a variety of wooden tools as well as some wood chips (possible wood-working debris) were found in the Lo Demás deposits (*see above,* seetion on Wooden Objects). The second pattern could result from scaling fish. Seven of the eight specimens

Table 22.—*Lithics from excavations in Sectors I and IV, Lo Demás. Abbreviations: Cat., catalogue number (Sandweiss, 1989:Appendix B); SC, stratigraphic complex (Sector I); Lv, level (Sector IV, Subunit 26D); CCF, cobble cortex flake; Obs, obsidian; GrS, ground stone; PW, polychaete worm (false coral); Quz, quartz; Slt, salt chunk; s, small; m, medium; l, large; dash, not present.* [a] *Possible mano fragment.* [b] *Appears to be part of a tool or preform.* [c] *Burnt.* [d] *One large piece, five small pieces, some burnt.* [e] *One large, three small.* [f] *Three small, one medium and burnt.*

Cat.	SC	Lv	CCF	Obs	GrS	PW	Quz	Slt	Other
					Sector I				
20	D		1	—	1[a]	—	—	—	—
22	D		1	—	—	—	—	—	—
82	D		1	—	—	—	—	—	—
94	D		1	—	—	—	—	—	—
240	D		1	—	—	—	—	—	—
243	D		1	—	—	—	—	—	—
272	D		—	—	—	1-s	—	—	—
299	D		—	—	—	1-s	—	—	—
342	D		1	—	—	—	—	—	—
397	D		—	—	—	—	1-s	—	1
429	D		—	—	—	—	1-s	—	—
440	D		2	—	—	—	—	—	—
477	D		1	—	—	—	—	—	—
514	D		1	—	—	—	—	—	—
515	D		—	—	—	—	—	—	1 poss. worked cobble
553	D		1	—	—	—	—	—	—
554	D		2	—	—	—	—	—	—
561	D		—	—	—	—	—	1-m	—
577	D		—	—	—	—	—	—	1 flake (basalt?)
581	D		2	—	—	—	—	—	—
750	D		—	—	—	—	1-s	—	—
767	D		1	—	—	—	—	—	—
775	D		1	—	—	—	—	—	—
849	D		1	—	—	—	—	—	—
864	D		2	—	—	—	—	—	—
995	D		1	—	—	—	—	—	—
1068	D		—	—	—	1-s	—	—	—
1218	D		1	—	—	—	—	—	—
1254	D		—	1	—	—	—	—	—
27	C		1	—	—	—	—	—	—
48	C		1	1[b]	—	—	—	—	—
57	C		5	—	—	—	—	—	—
58	C		1	—	—	—	—	—	—
127	C		1	—	—	—	—	—	—
133	C		1	—	—	—	—	—	—
322	C		—	1-s	—	—	—	—	—
556	C		—	—	—	—	—	—	1 flake w/organics
727	C		1	—	—	—	—	—	—
730	C		1	—	—	—	—	—	—
736	C		1	—	—	—	—	—	—
747	C		—	—	—	—	1-s	—	—
762	C		—	—	—	—	—	—	1 cobble hammer
770	C		1	—	—	—	—	—	—
789	C		1	—	—	—	—	—	—
792	C		2	—	—	—	—	—	—
799	C		1	—	—	—	—	—	—
810	C		1	—	—	—	—	—	—
819	C		—	—	—	1-s	—	—	—
825	C		1	—	—	—	—	—	—
838	C		—	—	—	1-s	—	—	—
839	C		1	—	—	—	—	—	—
844	C		1	—	—	—	—	—	—
855	C		1	—	—	—	—	—	—

Table 22.—*Continued.*

Cat.	SC	Lv	CCF	Obs	GrS	PW	Quz	Slt	Other
872	C		—	—	—	—	—	—	1 pebble w/salt and red stain
877	C		—	—	—	—	—	—	1 basalt? fragment
904	C		1	—	—	—	—	—	—
911	C		1	—	—	—	—	—	—
917	C		4	—	—	—	—	—	—
932	C		1	—	—	—	—	—	—
953	C		1	—	—	—	—	—	—
955	C		1	—	—	—	—	—	—
957	C		1	—	—	—	—	—	1 angular rock w/red pigment
988	C		—	—	—	1-l	—	—	—
991	C		1	—	—	—	—	—	—
993	C		1	—	—	—	—	—	—
1003	C		1	—	—	—	—	—	—
1045	C		2	—	—	—	—	—	—
1055	C		1	—	—	—	—	—	—
1057	C		—	—	—	—	1-s	—	—
1146	C		1	—	—	—	—	—	—
1215	C		—	—	—	1-l	—	—	2 poss. cobble hammers
1373	C		1	—	—	—	—	—	—
1396	C		—	—	—	—	—	—	1 angular rock w/red pigment; 1 basalt? flake
1418	C		—	—	—	—	—	—	1 basalt? flake
1425	C		1	—	—	—	—	—	—
1426	C		—	—	—	—	1-s	—	—
1512	C		1	—	—	—	—	—	—
1529	C		—	—	—	—	—	—	1 cobble half, battered on unbroken end
1630	C		—	—	—	—	1-s	—	—
1664	C		—	—	—	—	5-s	—	1 flake
1690	C		—	—	—	—	1-s	—	—
1736	C		—	—	—	—	—	—	1 cobble tool (hammer?)
1746	C		—	—	—	—	—	—	1 small flake
1747	C		—	—	—	1-s	—	—	—
1025	B		1	—	—	—	—	—	—
1052	B		—	—	—	—	—	—	1 cobble hammer
1067	B		1	—	—	—	—	—	—
1077	B		1	—	—	—	—	—	—
1191	B		2	—	—	—	—	—	—
1192	B		1	—	—	—	—	—	—
1201	B		—	—	—	—	—	—	1 broken cobble w/bulb of percussion
1278	B		1	—	—	—	—	—	—
1280	B		—	—	—	—	—	—	1 basalt flake w/bulb of percussion
1324	B		—	—	—	1-s	—	—	1 medium cobble fragment missing 2 flakes
1336	B		—	—	—	—	1-s	—	—
1348	B		1	—	—	—	—	—	—
1350	B		1	—	—	—	—	—	—
1352	B		1	—	—	—	—	—	—
1361	B		1	—	—	—	—	—	—
1390	B		—	—	—	—	—	—	1 basalt flake
1391	B		5	—	—	—	—	—	—
1422	B		3	—	—	—	1-s	—	—
1470	B		1	—	—	—	—	—	—
1471	B		—	—	—	1-l[c]	—	—	—
1502	B		5	—	—	1-s	—	—	1 cobble cortex chunk
1534	B		—	—	—	—	—	—	1 small basalt? flake
1555	B		—	—	—	1-s	—	—	—

Table 22.—*Continued.*

Cat.	SC	Lv	CCF	Obs	GrS	PW	Quz	Slt	Other
1558	B		1	—	—	—	—	—	1 poss. cobble tool
1567	B		1	—	—	—	—	1-s	—
1702	B		—	—	—	—	1-s	—	—
1719	B		—	—	—	1-s	—	—	1 flake
1731	B		1	—	—	—	—	—	—
1732	B		1	—	—	—	—	—	—
1740	B		1	—	—	1-s	—	—	—
1749	B		—	—	—	2-l	—	—	1 pebble tool
1750	B		—	—	—	1-l	—	—	1 flake; 1 unifacially worked stone
1759	B		—	—	—	—	—	—	1 flake
1760	B		—	—	—	—	—	—	2 flakes
1766	B		—	—	—	—	—	—	1 flake
1769	B		—	—	—	1-s	—	—	—
1784	B		—	—	—	—	—	—	1 flake
1786	B		—	—	—	6[d]	—	—	—
1802	B		—	—	—	—	1-s	—	—
1804	B		—	—	—	—	—	—	1 flake
1814	B		—	—	—	—	—	—	1 flake
1819	B		—	—	—	1-s	—	—	—
1836	B		—	—	—	1-l	—	—	—
1837	B		—	—	—	—	1-s	—	1 flake
1850	B		—	—	—	1-l	—	—	—
1857	B		—	—	—	4[e]	—	—	—
1855	B		—	—	—	1-s	—	—	—
1859	B		—	—	—	1-m	—	—	—
1871	A		—	—	—	—	—	—	1 flake
						Sector IV			
1719		4	—	—	—	1-s	—	—	—
1720		4b	—	—	—	4[f]	—	—	—
1725		4c	1	—	—	—	—	—	—
1800		10	—	—	—	1-l	—	—	—
1841		13	—	—	—	—	—	—	1 flake
1851		13b	—	—	—	—	—	—	1 core fragment

with use wear exhibited a clear or probable Type 2 pattern; only one specimen had a Type 1 pattern (Table 23). One of the tools with Type 2 wear (Table 23:cat. 133, Stratigraphic Complex C) still had fish scales adhering to it (Kvietok, 1988).

Donnan and Moseley (1968) interpret a lithic assemblage from the Late Intermediate Period Loma Lasca site (Santa valley, north coast) as a fish processing kit. The assemblage consisted primarily of fine-grained basalt flakes, but also included several quartzite and porphyry examples. Fish remains constituted the most abundant item in the midden. The authors conclude that

> "the flakes were utilized for the scaling and cleaning of fish. Their thin sharp edges would have been ideal for the task. No other object was encountered that could have served this purpose, nor was any other item found at Loma Lasca that would have necessitated the use of flakes" (Donnan and Moseley, 1968:503).

This interpretation is consistent with Kvietok's analysis of the Lo Demás flakes.

The results of his analysis led Kvietok (1988) to characterize the Lo Demás lithic assemblage as an "expedient tool kit" in which "each tool had a limited use life [and] . . . may have been made or collected for the task at hand and then immediately discarded after use." The same may be said for the entire corpus of lithics from Lo Demás (Table 22). This kind of "unstructured" lithic tool kit is expectable among sedentary populations such as the Chincha fishermen; for such populations, Gero (1983:48) has argued that

> "tool versatility and conservation [characteristics of more labor-intensive retouched tools] are not selected for; common

Table 23.—*Lithics from excavations at Lo Demás analyzed for edge wear (Kvietok, 1988). All specimens are from Sector I. Abbreviations: Cat., catalogue number (Sandweiss, 1989:Appendix B); SC, stratigraphic complex; Morph., morphology; PFC, primary flake struck from a cobble; CF, cobble fragment. See text for definition and interpretation of Types 1 and 2 edge damage.*

Cat.	SC	Morph.	Material	Edge Wear
133	C	PFC	andesitic tuff	Type 2
727	C	PFC	porphyritic andesite (possibly diorite)	Type 2
917	C	PFC	pelitic hornfels	Type 2
917	C	PFC	pelitic hornfels	Type 2
993	C	PFC	diorite	Type 2
1146	C	PFC	porphyritic diorite	Type 1
1422	B	PFC	andesite	Type 2
1470	B	CF	porphyritic andesite	Type 2

stone is abundant. Rather, the sharpness of an unretouched edge is often desired, without worry about edge damage and resource replenishment. Stone can be and apparently is used expediently and casually when relying on common raw materials."

Cobbles are abundant in the Río Chico river bed (*see* Fig. 1) about one km south of Lo Demás, as well as in a former beach line less than half a kilometer to the west of the site. The fishermen would have passed this latter source of cobbles each time they went to the shore to fish.

Bone and Shell Objects

The vast majority of shell and bone remains from Lo Demás pertain to the subsistence inventory of the site and are discussed in Chapter 9. This section covers shell and bone objects which have modifications related to nonsubsistence use or function.

Bone

Three bone artifacts have already been discussed in the section on needles; two appear to be netting needles and one is a cloth needle (*see* Fig. 48a, b and Table 20). We recovered three other bone artifacts from excavations in Lo Demás, two from Sector IV and one from Sector I (Table 24).

One of the Sector IV bone tools, from level 26–3 of Subunit 26D (Table 24:cat. 1717), was made on a right metacarpal of a young camelid (Fig. 51) (Altamirano, 1986). Although it could have served a variety of purposes requiring a hard, pointed implement, both Altamirano and B. Ojeda (personal communication) identified this tool as a *ruqqui*, an instrument used in weaving. The presence of a weaving tool supports the hypothesis of Sector IV textile manufacture based on the abundance of cotton remains in the Subunit 26D (*see* Chapter 10).

The second Sector IV bone tool is a flat, rectangular object (Fig. 52) from feature 2603i in Subunit 26D (Table 24:cat. 1788). Made of a fire-hardened camelid tibia, this object resembles a *mallero* (Altamirano, 1986).

The one bone tool uncovered in the Sector I excavations is a small piece of marine mammal long bone shaped into a triangle with one sharp point (Fig. 53 and Table 24:cat. 595) (Altamirano, 1986).

Table 24.—*Bone and shell artifacts from excavations at Lo Demás, Sectors I and IV. Abbreviations: Cat., catalogue number (Sandweiss, 1989:Appendix B); SC, stratigraphic complex (Sector I); Lv, level (Sector IV, Subunit 26D).* See also *Table 20 (cats. 370, 1788, 1851) for bone needles.*

Cat.	SC	Lv	Material	Description
				Sector I
595	C		bone	marine mammal long bone worked into a triangle with a sharpened point
1325	B		shell	nacar button, oval w/wavy profile along long sides, 10 × 8 × 3 mm, with two 2 mm diameter holes running the width of the object (i.e., ca. 8 mm long)
1470	B		shell	*Aulacomya ater* (mussel) valve with red pigment on both interior and exterior
				Sector IV
1717		3	bone	right metacarpal of a young camelid worked into a point; 11.6 cm maximum length
1788		f.2603i	bone	camelid tibia worked into a flat, rectangular tool measuring 2.9 × 1.1 × 0.4 cm maximum length, width, and thickness; possible *mallero*
1788		f.2603i	shell	*Aulacomya ater* (mussel) valve with yellow pigment
1788		f.2603i	shell	*Choromytilus chorus* valve with red pigment
1839		12d	shell	unidentified clam with red pigment
1839		12d	shell	*Choromytilus chorus* valve with red pigment
1863		f.2613	shell	*Spondylus* sp. circular bead, 4.5 mm diameter, 1 mm diameter hole

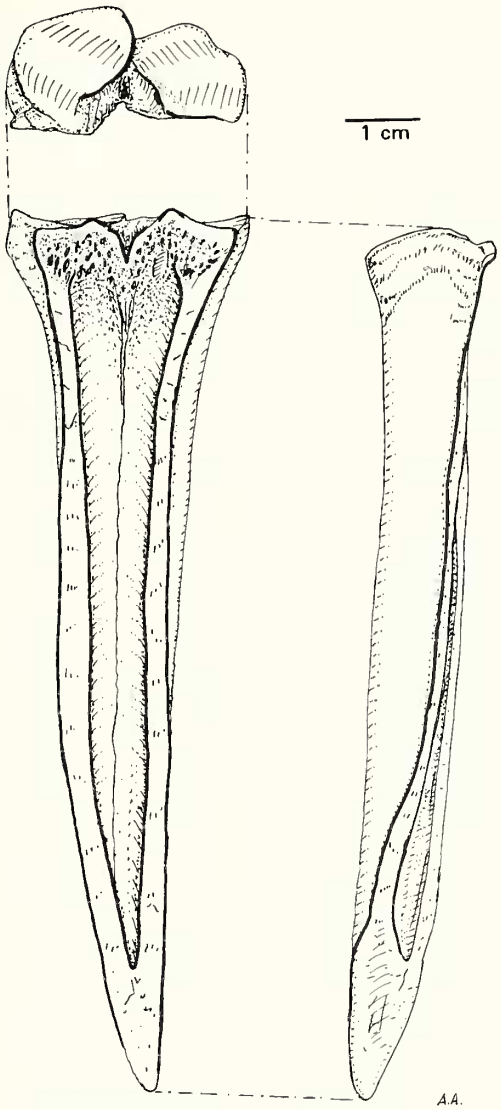


Fig. 51.—Bone *ruqqui* (weaving tool) from Lo Demás, Sector IV, Subunit 26D, level 3 (cat. 1717). See Table 24.

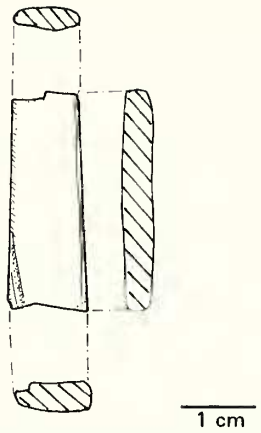


Fig. 52.—Bone *mallero* (net-making tool) from Lo Demás, Sector IV, Subunit 26D, feature 2603i (cat. 1788). See Table 24.

The function of this tool is unclear; Altamirano suggests that it could have been an awl for punching holes in leather.

Shell

Excavations at Lo Demás recovered three classes of shell for or from nonsubsistence use (Table 24): a shell bead, a shell button, and painted shells. The shell button (Table 24:cat. 1325) came from Stratigraphic Complex B in Sector I. Made of nacar, this object measures approximately 10 × 8 × 3 mm, with two 2 mm diameter holes running the length of the button. The bead, of the warm water mollusk *Spondylus,* came from feature 2613, Subunit 26D, in Sector IV (Table 24:cat. 1863). This bead is circular, with a diameter of 4.5 mm; the hole in the middle has a diameter of 1 mm. Despite the fact that *Spondylus* is supposed to have been one of the major items traded by the merchants of Chincha (e.g., Rostworowski, 1970:152–153, 161), this bead is the only piece of worked *Spondylus* found in Lo Demás; unworked *Spondylus* remains consist of two bits of spine (*see* Chapter 9), one from Seetor IV (feature 2612 in Subunit 26D) and one from Sector I (Stratigraphic Complex C:cat. 52).

Uhle found 12 whole *Spondylus* valves in Chincha graves, along with a fairly large number of beads and pendants made from this shell (Kroeber and

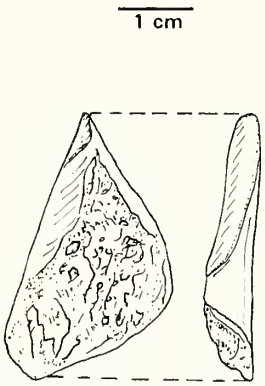


Fig. 53.—Triangular bone tool from Lo Demás, Sector I, Subunit 3C, feature 318, Stratigraphic Complex C (cat. 595). See Table 24.

Strong, 1924:30–31, 46). According to Kroeber and Strong's analysis, all of the whole valves were associated with Late Chincha II and especially Inka (= post-Chincha assemblage, Late Horizon) graves and none with the Late Chincha I (= pre-Inka) graves. Kroeber and Strong state that "spondylus and fine beads are characteristic of the Inca graves. They are virtually lacking from both LCa [Late Chincha] I and LCa II graves" (Kroeber and Strong, 1924:31). Thus, although the general lack of *Spondylus* in Lo Demás is puzzling, the location of the bead in Sector IV is consistent with other evidence that the inhabitants of this part of the site maintained close relations with the Inka.

The last, and most abundant, category of modified shells from Lo Demás are those with traces of paint (Table 24). One *Aulacomya ater* (mussel) valve with red pigment was recovered from Stratigraphie Complex B in Sector I (Table 24:cat. 1470). Two pieces of the purple mussel *Choromytilus chorus* with red pigment were found in Sector IV, Subunit 26D (Table 24:cats. 1788 and 1839); one was associated with a piece of *A. ater* with yellow pigment (Table 24: cat. 1788) and the other with a piece of an unidentified clam with red pigment (Table 24:cat. 1839). Uhle found six "mytilus" shells in his Chincha excavations, all from Late Chincha I graves (Kroeber and Strong, 1924:30). Three of these valves contained red pigment. In a brief, partial inspection of the Uhle collection in the Lowie Museum at the University of California, Berkeley, I saw that at least some of these mytilids are *Choromytilus chorus*. Although I did not see the specimens with pigment (and the curator, Lawrence Dawson, did not remember having seen them), Garaventa (1979:224) confirms the presence of three "*Mytilus*" valves with red pigment in the Uhle collection.

Choromytilus chorus occurs in nonsubsistence contexts throughout Andean prehistory, from the Lithic Period through the Late Horizon (Sandweiss, 1982:224, 1985*a*; Sandweiss et al., 1990). On the coast, the most consistent association is with red pigment, as at Chincha. What the painted valves were used for, and whether the use changed throughout the thousands of years which separate the earliest and latest occurrences, remains unclear. Because specimens often have pigment on both interior and exterior, use as paint containers is not the only answer; a more complex involvement in ritual activities is indicated.

CHAPTER 9

ORGANIC REMAINS: FAUNA

Introduction

This chapter presents and discusses the faunal remains from Lo Demás in five sections: mollusks, fish, crustaceans, vertebrates other than fish (including several miscellaneous classes), and animal coprolites. In each case, the available data represent a subsample of the excavated remains from Lo Demás; the quantity and quality of the information vary from section to section, with consequent variation in interpretations.

Fish and mollusks constitute the majority of faunal remains at Lo Demás, in accordance with expectations for a site occupied by fishermen. Among the nonfish vertebrates, seabirds and sea mammals together make up a significant proportion of the identified specimens. Although I do not attempt to calculate the exact contribution of different species to the diet of the site's inhabitants (*see below*), marine species clearly provided the bulk of the meat consumed at Lo Demás.

The faunal remains also provide data relevant to paleoenvironmental reconstruction, differential access to resources by elite and nonelite residents of the site, cross-correlation of stratigraphic complexes within and between the different sectors of the site, and patterns of capture, production, and consumption of marine animals. All of these categories of information help assess the ethnohistoric data concerning the conditions and organization of life among the Late Horizon fishermen of Chincha.

Molluscan Remains

Mollusks from archaeological sites offer information on topics ranging from subsistence practices and paleoenvironment to exchange networks and ritual behavior (Rollins et al., 1990). The Lo Demás mollusks provide data relevant to the reconstruction of natural and cultural features of the Late Horizon littoral environment in Chincha, as well as information on subsistenee, ritual, trade, and differential access to resources by elite and nonelite residents of the site. The shells also help confirm the validity of the Sector I stratigraphic complexes originally

Table 25.—*Taxonomic list of identified mollusk species from archaeological contexts at Lo Demás (from Rodríguez, 1984, 1987).* [a] Donax obesulus *is the precedent designation of the species frequently reported in the archaeological literature as* Donax peruvianus *(see Coan, 1983:277–279).*

PELECYPODA
- Dysodontida
  - Mytilidae
    - *Semimytilus algosus* (Gould) (small mussel)
    - *Choromytilus chorus* (Molina) (large, purple mussel)
    - *Aulacomya ater* (Molina) (mussel)
    - *Perumytilus purpuratus* (Lamarck) (small mussel)
- Isodontida
  - Spondylidae
    - *Spondylus* spp. (thorny oyster, *mullu*)
  - Pectinidae
    - *Argopecten purpuratus* (Lamarck) (scallop)
  - Veneridae
    - *Eurhomalea rufa* (Lamarck) (large clam)
    - *Protothaca* (*Protothaca*) *thaca* (Molina) (medium clam)
  - Petricolidae
    - *Petricola* (*Petricola*) *denticulata* (Sowerby) (borer)
  - Mactridae
    - *Mulinia edulis* (King) (small clam)
  - Mesodesmatidae
    - *Mesodesma donacium* (Lamarck) (large wedge clam)
  - Donacidae
    - *Donax* (*Chion*) *obesulus*[a] (Reeve) (small surf clam)

GASTROPODA
- Archaeogastropoda
  - Fissurellidae
    - *Fissurella* spp. (keyhole limpets)
  - Acmaeidae
    - *Acmaea* spp. (limpets)
  - Trochidae
    - *Tegula* (*Chlorostoma*) *atra* (Lesson) (small snail)
  - Turbinidae
    - *Prisogaster niger* (Wood) (small snail)
- Mesogastropoda
  - Calyptraeidae
    - *Calyptraea* (*Trochita*) *trochiformis* (Born) (spiral limpet)
    - *Crepipatella* spp. (slipper shells)
  - Naticidae
    - *Polinices* (*Polinices*) *uber* (Valenciennes) (small snail)
- Neogastropoda
  - Thaididae
    - *Thais* (*Stramonita*) *chocolata* (Duclos) (large snail)
    - *Thais* (*Stramonita*) *haemastoma* (Linnaeus) (snail)
    - *Thais* sp. (snail)
    - *Concholepas concholepas* (Bruguière) (false abalone)
  - Olividae
    - *Oliva* (*Oliva*) *peruviana* (Lamarck) (olive shell)

POLYPLACOPHORA
- Chitonidae
  - *Chiton* spp.

OTHER
- Bulimulidae
  - *Scutalus* spp. (land snails)
- Balanidae
  - *Balanus* spp. (barnacles—Crustacea)

Table 26.—*Mollusk species from Lo Demás by potential uses. Species for which the potential use is indicated or strongly supported at Lo Demás are marked with an asterisk. Some species have more than one use (see text for details).*

Food	
*Semimytilus algosus**	*Acmaea* spp.*
*Choromytilus chorus**	*Tegula* (*Chlorostoma*) *atra**
*Aulacomya ater**	*Prisogaster niger**
*Perumytilus purpuratus**	*Crepipatella* spp.*
Argopecten purpuratus	*Polinices* (*Polinices*) *uber**
*Eurhomalea rufa**	*Thais* (*Stramonita*) *chocolata**
Protothaca (*Protothaca*) *thaca**	*Thais* (*Stramonita*) *haemastoma**
*Mulinia edulis**	*Thais* sp.*
*Mesodesma donacium**	*Concholepas concholepas**
Donax (*Chion*) *obesulus**	*Chiton* spp.*
Fissurella spp.*	*Scutalus* spp.
Ornament	
Choromytilus chorus	*Oliva* (*Oliva*) *peruviana*
Spondylus spp.*	
Paint Container	
*Choromytilus chorus**	
Accidental Arrivals	
*Semimytilus algosus**	*Tegula* (*Chlorostoma*) *atra**
Petricola (*Petricola*) *denticulata**	*Balanus* spp.*
*Prisogaster niger**	

defined by strata orientations and architectural associations (*see* Chapter 5).

The studied sample of molluscan remains includes all of the mollusks (whole and fragments) retained in the ¼″ screen from the 1983 test excavations (Sector I), from Subunits 3B and 10D (Sector I), and from Subunit 26D (Sector IV).

María del Carmen Rodríguez H. (San Marcos University, Lima, Peru) analyzed the Lo Demás mollusks with my assistance (Rodríguez H., 1984, 1987). We identified 12 taxa of marine pelecypods (bivalves), 12 taxa of marine gastropods, one terrestrial gastropod, and chiton (*see* Table 25). Although barnacles (*Balanus* spp.) are crustaceans, we included them in the molluscan analysis because barnacles probably arrived at Lo Demás attached to rock-dwelling marine mollusks; also, like many mollusks and unlike the other crustaceans found at Lo Demás, barnacles are sessile. The sample contained a total MNI (Minimum Number of Individuals) of 13,636 and a total weight of 16,695.4 grams.

Most of the shell remains from Lo Demás came from primary midden deposits (*see* Chapter 5). Few of the shells were culturally modified except by charring, suggesting that the inhabitants of Lo Demás used mollusks principally as food (*see* Table 26).

Table 27.—*Total weight and MNI (Minimum Number of Individuals) of mollusks by taxon for all analyzed shell samples from Lo Demás (sample includes: Subunits A1, A2, A3, B3, C3, 3B, 10D in Sector I; Subunit 26D in Sector IV). MNI was aggregated by provenience. An asterisk indicates less than 0.1%. A dash means not applicable. Numbers in parentheses following MNI indicate the number of levels with fragments of a taxon but no MNI indicator; each of these levels contributed one count to the listed MNI. Data from Sandweiss (1989:Tables 33–36, 39).*

Genus/Species	Weight	%	Rank	MNI	%	Rank
Semimytilus algosus	5,407.8	32.4	2	4,875 (30)	35.7	2
Choromytilus chorus	39.8	0.2	12	46 (44)	0.3	10
Aulacomya ater	564.1	3.4	4	149 (77)	1.1	6
Perumytilus purpuratus	17.8	0.1	14	43 (17)	0.3	11
Spondylus spp.	0.2	*	26	3 (3)	*	19
Argopecten purpuratus	4.7	*	17	1 (1)	*	22
Eurhomalea rufa	1.6	*	22	1	*	22
Protothaca thaca	265.7	1.6	5	145 (81)	1.1	7
Petricola denticulata	1.7	*	21	4 (3)	*	17
Mulinia edulis	73.4	0.4	11	226 (43)	1.7	5
Mesodesma donacium	137.6	0.8	9	351 (28)	2.6	4
Donax obesulus	8,741.2	52.4	1	6,630 (13)	48.6	1
Fissurella spp.	17.3	0.1	15	13 (7)	0.1	15
Acmaea spp.	0.2	*	26	2	*	20
Tegula atra	25.3	0.2	13	101 (5)	0.7	9
Prisogaster niger	235.3	1.4	6	856 (7)	6.3	3
Calyptraea trochiformis	0.1	*	28	1	*	22
Crepipatella spp.	7.9	*	16	26 (4)	0.2	12
Polinices uber	2.6	*	20	2	*	20
Thais chocolata	721.1	4.3	3	114 (68)	0.8	8
Thais sp.	4.0	*	19	4 (2)	*	17
Concholepas concholepas	163.0	1.0	8	17 (14)	0.1	13
Oliva peruviana	0.8	*	24	1	*	22
Unidentified pelecypod	4.7	*	17	1	*	22
Scutalus spp.	1.1	*	23	17 (2)	0.1	13
Chiton spp.	0.5	*	25	7 (7)	0.1	16
Balanus spp.	84.4	0.5	10	—	—	—
Unidentified	171.5	1.0	7	—	—	—
Total	16,695.4			13,636		

However, a small number of specimens were modified in ways that indicate functions other than subsistence. Though mentioned in this chapter, the section on Bone and Shell Objects in Chapter 8 provides more detail about these specimens (*see* Table 24).

Methodology

Laboratory procedure involved several steps. First, the shell remains were washed and dried by provenience lots. Next, the remains from each provenience were separated and weighed by taxon (*see* Sandweiss, 1989:374, footnote 196). At this point, any observations on the specimens were noted (e.g., high percentage of burnt valves, presence of pigment, evidence of working). Finally, the MNI-indicators[78] were separated and the MNI counted. When identifiable fragments of a taxon found in a given provenience did not include an MNI-indicator, we assigned a default MNI of one. In compiling summary tables of the molluscan data, I included the default MNI counts in calculating total MNI.

General Characteristics of the Lo Demás Molluscan Remains

This section covers taxonomy, habitat, origin, and use of the mollusks recovered from Lo Demás. Table 25 provides a taxonomic chart of the identified mollusks. Marine gastropods and pelecypods are equally represented in number of taxa; however, the presence/absence criterion masks the real dominance of the marine pelecypods in the Lo Demás molluscan fauna (*see below* and Table 27).

Tables 28 and 29 list the habitats and geographic ranges of molluscan species from Lo Demás. In general, the Lo Demás molluscan fauna indicate littoral

Table 28.—*Mollusk species from Lo Demás by habitat (compiled from Olsson, 1961; Marincovich, 1973; Sandweiss, 1982; and Valdiviezo, personal communication).* [a] Crepipatella *spp. also occur in the subtidal zone, mostly on valves of* Aulacomya ater. [b] Concholepas concholepas *also occurs in the upper rocky subtidal zone.* [c] *The* Thais *snails are found in the lower rocky intertidal zone and both the rocky and sandy subtidal zones, where they prey on other mollusks.*

Rocky Intertidal Zone	
Semimytilus algosus	*Calyptraea (Trochita) trochiformis*
Perumytilus purpuratus	*Crepipatella* spp.[a]
Fissurella spp.	*Concholepas concholepas*[b]
Acmaea spp.	*Chiton* spp.
Tegula atra	*Balanus* spp.
Prisogaster niger	
Rocky Subtidal Zone	
Aulacmoya ater	*Thais (Stramonita) haemastoma*[c]
Thais (Stramonita) chocolata	*Thais* sp.
Sandy Intertidal Zone/Upper Subtidal Zone	
Donax (Chion) obesulus	*Mulinia edulis*
Sandy Subtidal Zone	
Choromytilus chorus	*Mesodesma donacium*
Eurhomalea rufa	*Polinices (Polinices) uber*
Protothaca (Protothaca) thaca	*Oliva (Oliva) peruviana*
Sandy/Muddy Bay Floor	
Argopecten purpuratus	
Other	
Scutalus spp.—lomas (land)	
Petricola denticulata—in polychaete worm (false coral, "piedra pomez") blocks in the upper subtidal zone	

conditions similar to those that now obtain in the area. The following paragraphs discuss exceptions and limitations to this observation.

All of the taxa found at Lo Demás are indigenous to the cool waters of the Peruvian Molluscan Province except *Spondylus* (Table 29; Marincovich, 1973; Olsson, 1961; Rodríguez H., 1984; Sandweiss, 1982). *Spondylus* is a red and white bivalve covered with spiny projections; although native to the warm waters of Ecuador, Colombia, and Central America,[79] it became an important ritual item in the prehistoric Central Andes. First appearing in Peruvian sites in the Late Preceramic Period (Feldman, 1980), *Spondylus* had spread throughout the Central Andes by the Early Horizon (Paulsen, 1974). During late pre-Hispanic times, trade in this shell became extremely important (Murra, 1975). Rostworowski (1970:152–153, 161) believes that acquisition of *Spondylus* was a major objective of the Chincha merchants who

Table 29.—*Ranges of marine mollusk taxa from Lo Demás (compiled from Coan, 1983; Lorenzen et al., 1979; Olsson, 1961; Marincovich, 1973; and Peña G., 1970).* [a] *Although reported distributions of this species (and other species of this genus) do not extend south of Chiclayo, Peru,* Polinices uber *has been identified in a number of sites from central Peru (e.g., Garagay, in Lima, Sandweiss, 1982). The discrepancy may be due to a misidentification, a shift in range, or incomplete collections of modern specimens. As a rare item (two occurrences) in the mollusk sample from Lo Demás, the uncertainties related to* P. uber *do not cause a significant problem in interpretation.*

Taxon	Range
Semimytilus algosus	Paita, Peru, to Arauco, Chile
Choromytilus chorus	Pacasmayo, Peru, to Tierra del Fuego
Aulacomya ater	Callao, Peru, to Straits of Magellan
Perumytilus purpuratus	Ecuador to Straits of Magellan
Spondylus spp.	Warm waters from Ecuador north
Argopecten purpuratus	Paita, Peru, to Coquimbo, Chile
Eurhomalea rufa	North Peru to Concepción, Chile
Protothaca (Protothaca) thaca	Callao, Peru, to Chonos Archipelago
Petricola (Petricola) denticulata	Lobos Island, Peru, to Chonos Archipelago
Mulinia edulis	Callao, Peru, to Straits of Magellan
Mesodesma donacium	Sechura, Peru, to Valparaiso, Chile
Donax (Chion) obesulus	Manabí, Ecuador, to Bahía Moreno, Chile
Fissurella spp.	Cold waters of Peru and Chile
Acmaea spp.	Cold waters of Peru and Chile
Tegula (Chlorostoma) atra	Pacasmayo, Peru, to Straits of Magellan
Prisogaster niger	Pacasmayo, Peru, to Straits of Magellan
Calyptraea (Trochita) trochiformis	Manta, Ecuador, to Valparaiso, Chile
Crepipatella spp.	Cold waters of Peru and Chile
Polinices (Polinices) uber	Baja California to north Peru[a]
Thais (Stramonita) chocolata	Paita, Peru, to Valparaiso, Chile
Thais (Stramonita) haemastoma	Baja California to Valparaiso, Chile
Concholepas concholepas	Callao, Peru, to Straits of Magellan
Oliva (Oliva) peruviana	Galapagos Islands to Valparaiso, Chile
Chiton spp.	Cold waters of Peru

sailed north to trade in Ecuador (*see* Chapter 2). However, we found only three fragments of *Spondylus* in Lo Demás:[80] two are bits of spine and one is a finished circular bead (*see* Chapter 8).

The geographic range of the Peruvian Province[81] mollusks found at Lo Demás includes the Chincha valley. However, from 1983 to 1986, Rodríguez and I saw live specimens of only four of these species in Chincha: *Donax obesulus, Semimytilus algosus, Thais chocolata,* and *Prisogaster niger. Donax* and *Semimytilus* are the most abundant shells at Lo Demás. We also found empty *Mulinia edulis* valves along the beach. The 1982–1983 El Niño affected the distribution of many mollusks, displacing species such as *Mesodesma donacium* hundreds of kilometers to the south of their usual range (Arntz, 1986; Rollins et al., 1986); the four species observed live in recent years in Chincha are among those most resistant to the effects of El Niño (Arntz, 1986; DeVries, 1987; Rollins et al., 1990).

El Niño could account for the absence of many species in the Chincha area in recent years;[82] the modern Chincha shoreline includes the appropriate habitats for the taxa listed in note 82, and the possibility exists that the inhabitants of Lo Demás collected these mollusks locally. However, the remaining Peruvian Molluscan Province species found at Lo Demás probably came from some area other than the immediate Chincha shoreline.[83] Many of these mollusks are rock-dwellers which live in the upper intertidal (splash) zone (*Perumytilus purpuratus*),[84] the intertidal zone of rocky promontories (*Acmaea* spp., *Concholepas concholepas, Fissurella* spp.), or subtidal rocky bottoms (*Aulacomya ater*). The entire length of the Chincha shoreline (ca. 40 km from the Quebrada Topará south to the edge of the Pisco valley) is sandy beach; the only rocks that we observed are small boulders in the lower intertidal zone near the mouth of the Río Chico (*see* Fig. 1). Local fishermen state that there are no large, submerged rocky areas off the Chincha coast; this anecdotal information is consistent with the absence of bedrock outcrops along or near the Chincha shore and with the absence of subtidal rock-dwelling mollusk valves in the beach deposits. The closest known sources for the rock-dwellers listed above are the Paracas Peninsula, 35 to 40 km to the south of Lo Demás, and the Chincha Islands, a similar distance to the southwest. The one recovered specimen of *Argopecten purpuratus* (scallop) almost certainly came from the Paracas area. This scallop lives on bay floors; the nearest bay is San Andrés, on the north side of the Paracas peninsula.

Choromytilus chorus is the final species with a problematic provenience. Since Late Preceramic times, the northern limit of *Choromytilus* has apparently shifted south from somewhere between the Moche and Lambayeque valleys to the central coast between Paracas and Ancón. Within the latter area, reports of live populations are geographically sporadic. Valdiviezo (personal communication) observed small populations of *Choromytilus* in the late 1970s at Santa Rosa, near Ancón on the northern side of Lima. Early in this century, Murphy (1921: 50) noted abundant beds of this species from sand banks at the Bahía de Independencia on the south side of the Paracas peninsula, and in 1983, Carlos Elera (personal communication, 1983) collected live specimens from nearby Laguna Grande. *Choromytilus chorus* lives in banks in sandy and muddy bottoms with scattered rocks, with an apparent preference for protected areas such as bays. Although it might have inhabited the Chincha area in the past, the open shoreline there today does not seem favorable for *Choromytilus.*

These data suggest that the late pre-Hispanic inhabitants of Lo Demás got *Choromytilus chorus* from the Paracas area. Trade or exchange for this species is an old tradition in the Andes. Importation of *Choromytilus* into the highlands for nonsubsistence purposes began at least as early as the Early Archaic Period and continued throughout prehistoric time. On the coast, the purple mussel had both subsistence and nonsubsistence functions, the latter as paint containers and/or as painted shells used for decoration or other ritual activities (Sandweiss, 1982: 224, 1985*a*). Trade in *Choromytilus* valves along the littoral may have brought shells of this species to areas where it no longer lived. At Lo Demás, *Choromytilus* remains include a number of specimens with pigment (*see* Chapter 8, section on Bone and Shell Objects, for a description).

Primary midden context, occasional charring, and the rarity of intentional modification of the mollusk valves from Lo Demás suggest that the inhabitants of the site used shellfish mainly as a source of food (Table 26). However, some imported species had intentional nonsubsistence uses (*Spondylus* and *Choromytilus—see above*), while specimens of several local species entered the site accidentally. This latter category includes the barnacles (*Balanus* spp.), the *Petricola denticulata,* many of the *Prisogaster*

niger, and some of the *Semimytilus algosus* and *Tegula atra* specimens. Peruvian coastdwellers do not eat barnacles today, and their ancestors probably did not do so, either. We found few barnacles in Lo Demás, mostly small; several specimens were attached to valves of other species such as *Semimytilus algosus*. The few examples of *Petricola denticulata* found in Lo Demás probably arrived with the calcareous worm heads in which it lives (*see* note 82). Among the abundant remains of *Semimytilus algosus* were a few closed, articulated valves. Many of the *Prisogaster niger* snails still had their opercula, and we found a number of loose opercula of this species. One of the few intact *Tegula atra* valves also had its operculum in place. Closed, articulated bivalves and operculum-sealed gastropods could not have been eaten.

Prisogaster and *Tegula* both live in the same habitat as *Semimytilus*. A common method of collecting *Semimytilus* involves scraping large quantities of this small mussel off of the rocks on which it lives; such a procedure results in the accidental collection of very small *Semimytilus* valves along with *Prisogaster* and *Tegula*. The articulated specimens of these species found in Lo Demás were probably collected in this way.

Quantitative Analysis

Objectives and limitations.—The quantitative analysis of molluscan remains can have two major functions: to estimate the dietary contribution of the mollusks and to recognize changing or contrasting patterns of mollusk use.

Dietary reconstruction involves estimating the weight of the meat originally contained in the mollusk valves found in an archaeological assemblage. Attempts to make such calculations have a long history (*see* Koloseike, 1969, for a review of early efforts; *see* Rollins et al., 1990, for more recent studies); the last two decades have seen the development of fairly accurate techniques for meat weight estimation based on allometric models and regression analysis (Parmelee and Klippel, 1974; Reitz et al., 1987; Sandweiss, 1979, 1985*b*). Although regression estimates of live weights from skeletal elements of vertebrate animals continue to be problematic (Grayson, 1984:172–174), the low number of skeletal elements in mollusks (maximum of two) and the direct morphological relationship between shell (container) and meat (contained) make mollusks more successful targets than vertebrates for meat weight analysis.[85] Comparison of experimental results for various Peruvian mollusks (Sandweiss, 1979, 1985*b*; Tomka, 1980) indicates that regression coefficients are species-specific, though Reitz et al. (1987) found that regressions on Florida mollusk data pooled by genus provided acceptable estimates. These observations present an empirical limitation on meat weight estimation—experimental data must be available for each species or at least genus for which meat weight needs to be estimated. I have run experiments on five Peruvian taxa: *Donax obesulus* (Sandweiss, 1979), *Semimytilus algosus*, *Perumytilus purpuratus*, *Mesodesma donacium*, and *Crepipatella* spp. (Sandweiss, 1985*b*); Tomka (1980) provides data for *Aulacomya ater*. These six species account for 89.1% by weight and 87.9% by MNI of the Lo Demás sample (Table 27). Nevertheless, the results of the meat weight analyses are not presented here because of a further limitation on the use of such data; interpretation of the importance of shellfish in prehistoric diet requires equivalent quantitative estimates of the food value provided by all other food types found in the site under analysis. Estimation of vertebrate meat weight from archaeological remains is problematic (and no one has yet published experimental data for Peruvian fish or terrestrial animals), while the dietary contribution of botanical remains is even harder to quantify.

Recognition of changing patterns of mollusk use requires calculating the relative frequencies of different species through time in a stratified archaeological deposit. Identifying, weighing, and counting the sample is straightforward; problems arise at the interpretive stage because of the difficulty in assessing the contributions of cultural preference[86] and natural availability in forming the midden (*see* Rollins et al., 1990:470–471). The difference is crucial; changes resulting from cultural preference provide information on human behavior, while those resulting from natural availability indicate environmental alterations.[87] The two kinds of processes must be distinguished in order to draw meaningful conclusions from the molluscan data. In this study, I have used the following assumption to differentiate some of the changes due to preference from some of those resulting from availability: *changes in frequency of species in a stratigraphic sequence reflect changes in availability*[88] *rather than preference when all of the involved species remain well represented in the contrasting archaeological levels.* The few ethnographic studies of shellfish collectors (e.g., Bigalke

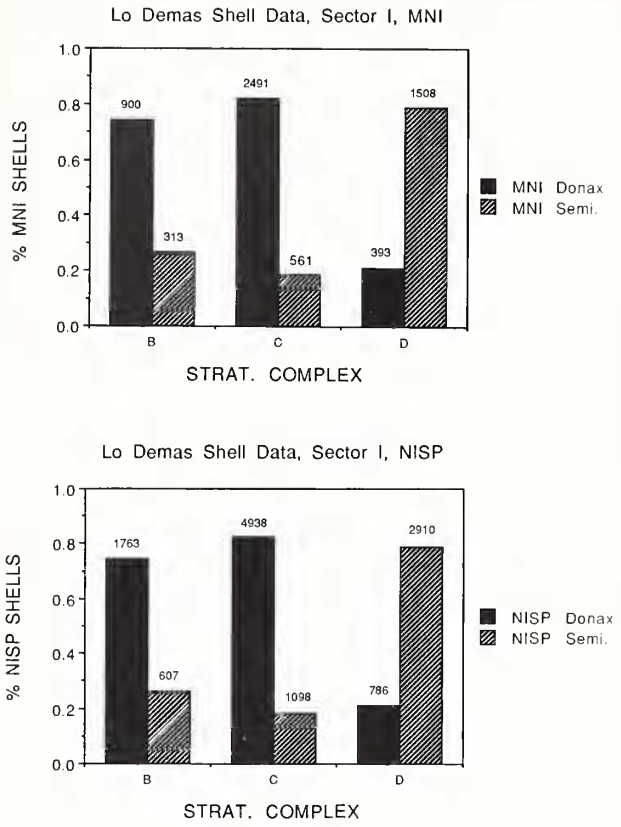


Fig. 54.—Relative abundance of the mollusks *Donax obesulus* and *Semimytilus algosus* in the molluscan sample from Stratigraphic Complexes B, C, and D in Sector I of Lo Demás, by MNI and by NISP. Histograms show percent of *Donax* and *Semimytilus* in each level; in calculating the percentages, only these two species were used. The numbers above the histograms show the absolute abundance of each species in each complex.

and Voight, 1973; Meehan, 1977, 1982) do not support relative shifts of preference—a species either is eaten or it is not. The disappearance or appearance of a species in an archaeological sequence may result from either natural or cultural causes, though my personal observations in Peru suggest that a preference hierarchy imposed on natural availability accounts for most changes of this sort (*see* Sandweiss, 1989:390, footnote 216).

The above assumption does not apply to contrasting frequencies between different parts of a site when the exact contemporaneity of the strata in each part of the site cannot be established. Interpretations based on such contrasts are more general and less secure than those drawn from changes within a single stratigraphic sequence. Even when contemporaneity of strata is clear, different functional contexts of different parts of a site[89] introduce new possibilities for cultural explanations of contrasting frequencies. Comparison of the molluscan assemblages from Sector I (common residences) and Sector IV (elite structures) of Lo Demás provides a case in point (*see below*).

Analysis by stratigraphic complex in Sector I.— For this analysis, the different members of each stratigraphic complex in Sector I were pooled into complex totals, in order to see changes through time in predominant molluscan taxa (Sandweiss, 1989: Tables 33–36). One major change takes place in the stratigraphic sequence in Sector I: in Complex D (the most recent deposit), *Semimytilus algosus* replaces *Donax obesulus* as the dominant species in terms of both weight and MNI (Table 30, Fig. 54). *Donax* had dominated the molluscan remains in all three earlier complexes (A to C). In Complex D, an increase in *Prisogaster niger* accompanied the increase in *Semimytilus algosus*. Many of the *Prisogaster* specimens are quite small and still have their opercula; they were probably collected accidentally with the *Semimytilus*, as both species share the same rocky intertidal habitat.

Statistically, the differences in the frequency of *Donax* and *Semimytilus* between Complexes B and C and between Complexes C and D cannot be due to random variation in samples drawn from the same parent population (*see* Table 31); the *Donax*/*Semimytilus* reversal between Complexes C and D reflects a real change (whatever the cause). This result holds true for the shells when compared by weight, NISP (Number of Identified Specimens), and MNI aggregated by provenience or by complex.[90]

We first noticed the *Donax*/*Semimytilus* reversal while analyzing the 1983 remains (Complexes A, C, and D) (Rodríguez H., 1984; Sandweiss, 1988). The samples from the 1984 excavations (Subunits 3B and 10D) show the same pattern; Complex B (not present in the 1983 excavation) fits the pattern, with a high proportion of *Donax*. This correspondence confirms the correlation of the stratigraphic complexes in the 1983 and 1984 excavation areas of Sector I based on strata orientation and architectural associations (*see* Chapter 5). Analysis of the mollusks by provenience within each complex corroborates the grouping of the strata into complexes; the predominance of *Semimytilus* begins immediately above the lowest provenience of Complex D, while *Donax* predominates in virtually all proveniences of Complexes A to C.[91]

Following the assumption discussed above concerning changes in species frequencies, the *Donax*/

Table 30.—Donax peruvianus *versus* Semimytilus algosus, *Lo Demás Sector I, Stratigraphic Complexes A to D, by weight and by MNI. Counts are absolute, percentages are relative to all molluscan remains from each stratigraphic complex. Compare to Fig. 54, which plots* Donax *against* Semimytilus *for Complexes B to D.*

	A		B		C		D	
	Wgt	%	Wgt	%	Wgt	%	Wgt	%
D. obesulus	44.9	77.8	1,244.7	74.1	3,360.0	72.1	606.1	17.8
S. algosus	2.5	4.3	269.3	16.0	914.8	19.6	2,190.2	64.1
	A		B		C		D	
	MNI	%	MNI	%	MNI	%	MNI	%
D. obesulus	38	71.7	947	63.9	2,616	72.2	472	16.9
S. algosus	6	11.3	359	24.2	633	17.5	1,549	55.4

Semimytilus reversal represents a change in the availability of these mollusks; both species are well represented in all complexes, despite the real reversal in dominance. Possible explanations for the increased relative abundance of *Semimytilus* fit into three categories:

1) Overexploitation of *Donax* by local collectors, leading to decreased availability of this species. The continued, substantial presence of *Donax* in Complex D without a noticeable decrease in size argues against overexploitation.

2) Climate change affecting *Donax* more than *Semimytilus*. Because *Donax* and *Semimytilus* are both indigenous to the same cool water conditions and because both are present in Chincha today, any climate change during the Late Horizon occupation of Lo Demás would necessarily have been minor and/or temporary. Under these conditions, El Niño provides the only likely possibility for a short term change in coastal climate. El Niño does affect different mollusk species to different degrees (Arntz, 1986; Rollins et al., 1986). However, in Chincha as well as elsewhere on the coast, both *Donax* and *Semimytilus* recovered from the major 1982–1983 El Niño in a few months (Arntz, 1986; Rollins et al., 1990; personal observations).

3) Changes in the physical environment leading to increased rocky intertidal area or decreased sandy intertidal area in the vicinity of Lo Demás. Several natural processes could have produced such changes: the Río Chico (Fig. 1) might have brought more rocks to its mouth; the river could have shifted its mouth to the north, closer to Lo Demás (today, intertidal rocks and *Semimytilus* occur in Chincha only at the river mouths); or shoreline erosion could have removed sand from the beach and exposed previously buried rocks, which subsequently would have been reburied by the coastal progradation mentioned by historical sources (e.g., Cánepa P., 1982:88; Coker, 1908–VI:89; Pachas T., 1983:40; *see* Chapter 5).

Within the third category, there is an intriguing possibility that the molluscan evidence reflects the construction of a jetty or pier near Lo Demás. The documentary sources concerning Chincha mention the valley's importance as a maritime trading power (*see* Chapter 2). Pedro Pizarro wrote that the Inka Atawalpa told him in Cajamarca of the Inka's great friend the lord of Chincha, who had "100,000 balsas [trading rafts] on the sea" (Pizarro, 1965 [1571]: 232). Although certainly an exaggeration, the large figure cited by Pizarro demonstrates the importance of the trading rafts to Chincha—they are the symbol by which the Inka identified the lord of Chincha. Lo Demás lies directly between the shore and La Centinela, the Chincha capital and Inka administrative center (Menzel and Rowe, 1966), so a port facility built to service the lord of Chincha's trading ventures would have been close to Lo Demás. Though I saw no traces of such a facility, the rapid progradation of the shoreline would have buried the rocks of a low-lying jetty. Geophysical prospecting

Table 31.—*Statistical analysis of the variation in frequency of* Donax obesulus *relative to* Semimytilus algosus *between stratigraphic complexes in Sector I, Lo Demás. Analyses were run on the data for NISP, MNI aggregated by stratigraphic complex (SC), MNI aggregated by provenience (pr.), and weight. Results are reported as the observed difference in the percentage of* Donax *between two levels expressed as standard deviations from the expected difference (0) based on the null hypothesis that each pair of complexes was drawn from the same parent population.*

Between Complexes	Number of Standard Deviations			
	NISP	MNI (SC)	MNI (pr.)	Weight
C and D	58.67	42.38	42.13	58.87
B and C	7.60	5.42	5.84	9.47

Table 32.—*Total weight and MNI (Minimum Number of Individuals) of mollusks by taxon for Sector I, Lo Demás. MNI was aggregated by provenience. An asterisk indicates less than 0.1%. A dash means not applicable. Numbers in parentheses following MNI indicate the number of levels with fragments of a taxon but no MNI indicator; each of these levels contributed one count to the listed MNI. Data from Sandweiss (1989:Tables 33–36).*

Genus/Species	Weight	%	Rank	MNI	%	Rank
Semimytilus algosus	3,376.8	34.4	2	2,547 (26)	32.0	2
Choromytilus chorus	29.5	0.3	12	30 (29)	0.4	9
Aulacomya ater	265.0	2.7	3	91 (59)	1.1	7
Perumytilus purpuratus	2.1	*	19	8 (5)	0.1	13
Spondylus spp.	0.1	*	24	1 (1)	*	19
Argopecten purpuratus	4.7	*	16	1 (1)	*	19
Protothaca thaca	219.4	2.2	4	109 (60)	1.4	6
Petricola denticulata	1.7	*	21	4 (3)	0.1	17
Mulinia edulis	50.1	0.5	9	158 (31)	2.0	5
Mesodesma donacium	82.5	0.8	8	194 (14)	2.4	4
Donax obesulus	5,255.7	53.6	1	4,073 (12)	51.1	1
Fissurella spp.	17.1	0.2	13	11 (5)	0.1	12
Acmaea spp.	0.1	*	24	1	*	19
Tegula atra	16.5	0.2	14	22 (2)	0.3	10
Prisogaster niger	183.9	1.9	5	616 (5)	7.7	3
Calyptraea trochiformis	0.1	*	24	1	*	19
Crepipatella spp.	5.9	0.1	15	16 (2)	0.2	11
Polinices uber	2.0	*	20	1	*	19
Thais chocolata	108.8	1.1	6	60 (40)	0.8	8
Thais sp.	2.5	*	18	3 (2)	*	18
Concholepas concholepas	36.4	0.4	11	5 (4)	0.1	15
Unidentified pelecypod	4.7	*	16	1	*	19
Scutalus spp.	0.7	*	22	8	0.1	13
Chiton spp.	0.3	*	23	5 (5)	0.1	15
Balanus spp.	38.6	0.4	10	—	—	—
Unidentified	107.0	1.1	7	—	—	—
Total	9,812.2			7,966		

could probably detect this kind of feature. Historical records for the earlier part of this century provide a rationale for the construction of a jetty in Chincha; landing a boat on the open Chincha shore is extremely difficult (e.g., Coker, 1908–VI:89). Small totora fishing craft can land without too much problem, but keeled, European craft as well as heavily laden cargo rafts require some sort of port facility. That such a facility should have been constructed during the Late Horizon and not earlier is consistent with the hypothesis that Chincha's maritime trading activities were significantly expanded under Inka rule (*see* Chapter 2).

Analysis by sector.—The samples from Sectors I and IV are remarkably similar in terms of the taxa present and the proportional representation of each taxon (Tables 32 and 33). The only notable difference is in the percent by weight of three of the largest species present: *Aulacomya ater, Thais chocolata,* and *Concholepas concholepas.* In each case, the Sector IV sample has a slightly higher proportion of these species than does the total Sector I sample (the percentage of total weight for the three species combined is 15.0% in Sector IV and 4.2% in Sector I). However, the proportions for MNI do not show the same trend; they are almost identical for all three species in both samples (the percentage of total MNI for the three species combined is 2.2% in Sector IV and 2.0% in Sector I). These data indicate that the individuals of the three species were larger in Sector IV than in Sector I. Although conclusions drawn from the comparison of the two samples must remain very tentative until a larger sample becomes available (esp. from Sector IV), the greater representation of the large species in the Sector IV sample suggests that the inhabitants of that sector had selective or differential access to molluscan resources. Such privilege fits the data for other classes of remains as well as the architectural evidence for the elite nature of Sector IV. Of course, this hypothesis assumes that larger specimens of the large species held greater value for the late pre-Hispanic inhabitants of Chincha than did the smaller specimens.

Another important factor is the local/imported

Table 33.—*Total weight and MNI (Minimum Number of Individuals) of mollusks by taxon for Subunit 26D, Sector IV, Lo Demás. MNI was aggregated by provenience. An asterisk indicates less than 0.1%. A dash means not applicable. Numbers in parentheses following MNI indicate the number of levels with fragments of a taxon but no MNI indicator; each of these levels contributed one count to the listed MNI.*

Genus/Species	Weight	%	Rank	MNI	%	Rank
Semimytilus algosus	2,031.0	29.5	2	2,328 (4)	40.1	2
Choromytilus chorus	10.3	0.1	13	16 (15)	0.3	11
Aulacomya ater	299.1	4.3	4	58 (19)	1.0	7
Permytilus purpuratus	15.7	0.2	12	35 (12)	0.6	10
Spondylus spp.	0.1	*	23	2 (2)	*	15
Eurhomalea rufa	1.6	*	16	1	*	18
Protothaca thaca	46.3	0.7	9	36 (21)	0.6	9
Mulinia edulis	23.3	0.3	11	68 (12)	1.2	6
Mesodesma donacium	55.1	0.8	7	157 (14)	2.8	4
Donax obesulus	3,485.5	50.6	1	2,557 (1)	45.1	1
Fissurella spp.	0.2	*	21	2 (2)	*	15
Acmaea spp.	0.1	*	23	1	*	18
Tegula atra	8.8	0.1	14	79 (3)	1.4	5
Prisogaster niger	51.4	0.7	8	240 (2)	4.2	3
Crepipatella spp.	2.0	*	15	10 (2)	0.2	12
Polinices uber	0.6	*	19	1	*	18
Thais chocolata	612.3	8.9	3	54 (28)	1.0	8
Thais sp.	1.5	*	17	1	*	18
Concholepas concholepas	126.6	1.8	5	12 (10)	0.2	13
Oliva peruviana	0.8	*	18	1	*	18
Scutalus spp.	0.4	*	20	9 (2)	0.2	14
Chiton spp.	0.2	*	21	2 (2)	*	15
Balanus spp.	45.8	0.7	10	—	—	—
Unidentified	64.5	0.9	6	—	—	—
Total	6,883.2			5,670		

criterion; two of the three large species with greater representation in Sector IV were probably imported from neighboring valleys or islands (*see above*). Comparing the samples from the two sectors in terms of the proportion of marine taxa most likely to have come from outside the Chincha valley,[92] the Sector IV sample has about twice as much imported shell as Sector I by weight (6.6% in Sector IV vs. 3.6% in Sector I), though only about 20 percent more by MNI (2.3% vs. 1.9%, Table 34). The observed difference by weight between the frequency of imported shells in Sectors I and IV is 8.75 standard deviations from the frequency expected if there were no real difference between the two samples ($P < 0.0001$). This result confirms that the difference is statistically real. The observed difference by MNI is only 1.31 standard deviations from the expected difference under the null hypothesis of no difference in the parent populations ($P > 0.19$). The greater difference in weight than in MNI reflects the larger size of individual specimens in Sector IV; thus, the data on importation of shells support the hypothesis that the Sector IV inhabitants enjoyed differential access to shellfish. However, the privilege of selectivity apparently applied only to food species; both sectors have equivalent—and minimal—representation of the two primary nonsubsistence taxa, *Choromytilus* and *Spondylus*.[93]

A final point of comparison between the shell samples from Sectors I and IV concerns the relative predominance of *Semimytilus* and *Donax*. The radiocarbon dates (Chapters 5 and 11), the ceramics (Chapter 7), and the figurines (Chapter 8) indicate that Sector I and Sector IV are broadly contempo-

Table 34.—*Percentage of imported shell by weight and MNI (aggregated by provenience) in the samples from Sectors I and IV, Lo Demás (see note 92 for a list of shells considered as imported).*

	Weight	MNI
I (% of total shells)	3.6%	1.9%
IV (% of total shells)	6.6%	2.3%
Ratio IV/I (%)	1.833	1.211
Difference in frequencies between Sectors I and IV expressed as standard deviations from the expected difference (0) under the null hypothesis of no difference in parent populations	8.75	1.31

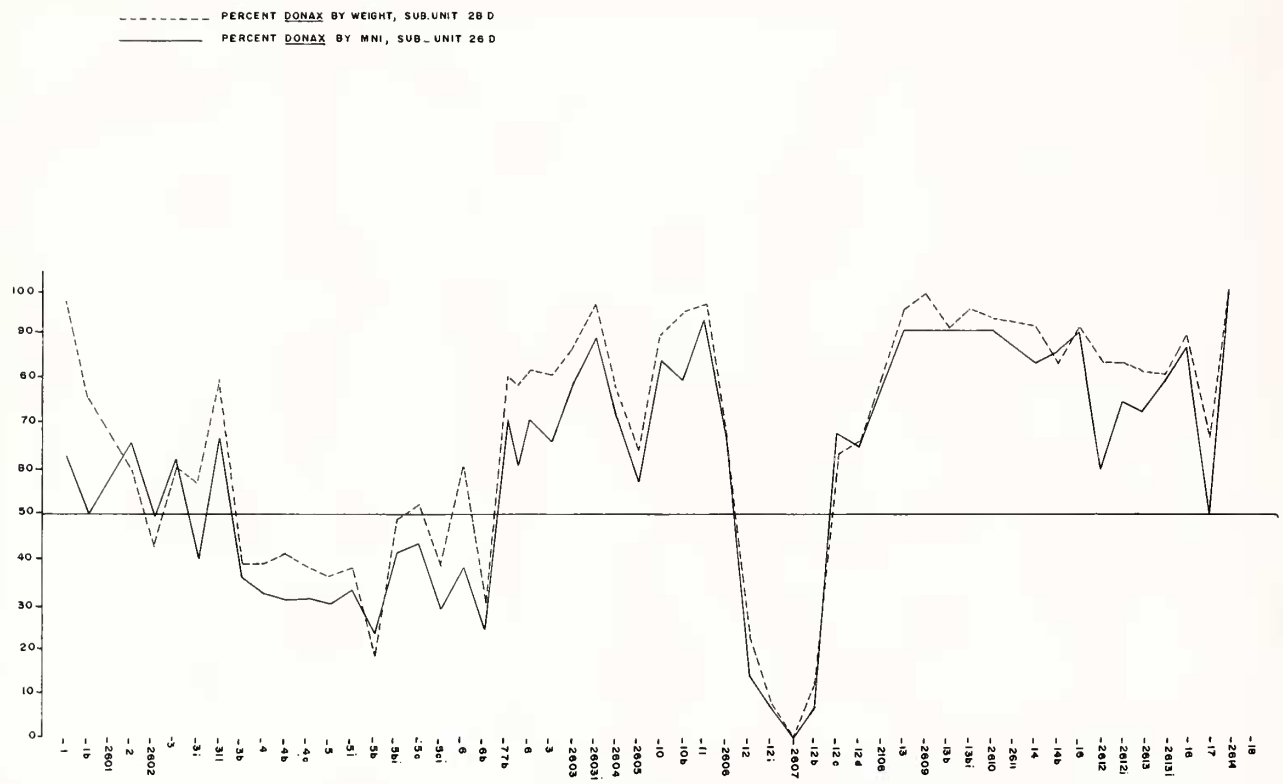


Fig. 55.—Percent of the mollusk *Donax obesulus* relative to *Semimytilus algosus* by level in Lo Demás, Sector IV, Subunit 26D, for MNI (solid line) and shell weight (dashed line).

raneous. Therefore, I would expect that the two species which vary so notably in predominance in the Sector I sequence would have a similar pattern in Sector IV. Such a pattern would allow more exact cross-dating of the two parts of the site. In fact, the Sector IV sample shows several shifts (Fig. 55, *see* Fig. 10 for Subunit 26D statigraphy). Unlike Sector I, *Donax* predominates in the upper proveniences (1 to 3) and *Semimytilus* predominates in the next lowest group of strata (3b to 6b). Below these two groups, however, *Donax* (7 to 11, 12c to 17) alternates with *Semimytilus* (12 to Feature 2607). Several alternative hypotheses could explain this pattern.

1) The Subunit 26D strata do not overlap in time with the Sector I occupation. This hypothesis can be rejected in light of the other data on chronology.

2) The Subunit 26D mollusks do not reflect local availability in the same way as the Sector I remains, perhaps due to access privileges. In this case, there should not be any major shifts in predominant species. The existence of clearly marked species shifts thus serves to reject this hypothesis.

3) The Subunit 26D deposit covers an overlapping but greater length of time than the Sector I strata. Considering the independent chronological data indicating broad contemporaneity between the two deposits, this alternative is the most strongly supported. In this case, the problem becomes one of determining which Sector IV *Semimytilus/Donax* dyad corresponds to the Sector I complexes. The upper proveniences of Subunit 26D probably either postdate the Sector I deposit or consist of mixed material. As an elite area, occupation of Sector IV may well have continued further into the postconquest period (with its radical population decline) than did Sector I. However, we found no European artifacts in Sector IV, though some of the animal feces in the upper proveniences looked very much like sheep/goat (*see below*). The rather early radiocarbon date (out of stratigraphic order) argues for the possibility of mixing; in this case, the predominance of *Donax* could represent earlier conditions.

Following this line of reasoning, the group of proveniences (3b to 6b) with *Semimytilus* predominance would be equivalent to Complex D in Sector I. Proveniences 7 to 11 would correspond to Complexes C and B, leaving two possible explanations for proveniences 12 to 12b and 12c to 17. These lower sets may pre-date the Sector I deposits or the

small block of *Semimytilus*-dominated proveniences (12 to 12b) may represent a statistical anomaly. In the latter case, Complexes C and B of Sector I match proveniences 7 to 17 in Subunit 26D. I prefer the second possibility for several reasons. The use of Inka-related rectangular *adobes* indicates that the walls built at about the time when provenience 17 was deposited postdate the Inka conquest of the valley (*see* Chapters 4 and 6); the Cuzco Polychrome A sherd from Complex B in Sector I (*see* Chapter 7) demonstrates that the Sector I deposit also postdates the Inka conquest of Chincha. Contemporaneity is also shown by the radiocarbon dates; the date from the lower deposits in Subunit 26D corresponds nicely to those for Sector I. The assignment of both sectors to the Late Horizon based on the artifacts leaves little time for the deposition of Complexes B to D in Sector I and proveniences 17 to 1 in Sector IV. Both the renewed construction activity in Sector IV and the initial occupation of Sector I may well reflect the changes accompanying the incorporation of Chincha into the Inka empire.

Fish Remains

Like mollusks, fish remains have great potential for archaeological interpretation (e.g., Casteel, 1976). The fish bones recovered at Lo Demás provide information on the general marine environment, on fishing and fish-processing practices, and on differential access to resources by elite and nonelite residents of the site. The fish bones, like the shells, also help confirm the validity of the stratigraphic complexes in Sector I originally defined by strata orientations and architectural associations (*see* Chapter 5).

The fish remains come from the same primary midden contexts as the shell remains. The studied sample includes all of the fish bones recovered in the ¼" screen from the 1983 test excavations (Sector I), from Subunits 3B and 10D (Sector I), and from Subunit 26D (Sector IV). Subunit 26D was treated as a single stratigraphic complex; the subdivisions suggested by the shell remains (*see above*) were tested against the fish remains with ambiguous results.

Gilber Mariano A. (Javier Prado Natural History Museum, Lima, Peru) identified the fish bones from Lo Demás (Mariano A., 1984, 1985, 1986), classifying specimens of ten taxa to the species or genus level. These taxa are distributed among six families; specimens from two other families could not be identified at a lower taxonomic level (Table 35). Of a total of 7,706 analyzed specimens, 5,896 (76.5%) pertain to the ten identified genera or species.

Table 35.—*Taxonomic list of identified fish species from archaeological contexts at Lo Demás (from Mariano A., 1984, 1985, 1986). Orders and families are listed without specific representatives when no specimens were identified more precisely than the order or family level.*

SQUALIFORMES
CLUPEIFORMES
Clupeidae
Brevoortia maculata
Sardinops sagax
Engraulidae
Engraulis ringens
Anchoa nasus
SILURIFORMES
Ariidae
PERCIFORMES
Haemulidae
Anisotremus sp.
Sciaenidae
Cynoscion analis
Paralonchurus peruanus
Sciaena sp.
Mugiloididae
Mugiloides sp.
Scombridae
Sarda sarda chiliensis
Centralophidae

Methodology

The laboratory analysis of the fish remains from Lo Demás involved several phases. The first phase was the preparation of a comparative collection. Mariano (1984) began by determining the species of fish now indigenous to the Chincha area and therefore most likely to have been available to late pre-Hispanic Chincha fishermen. To make this list, Mariano consulted Velez's (1975) tables of common species from each marine habitat of the nearby Pisco area. Observations and published descriptions of the Chincha coast indicate that available habitats today include or may include the following zones: coastal pelagic, sandy to muddy benthic, and sandy to rocky benthic. Available indicators of marine conditions during the Late Horizon occupation of Lo Demás suggest that a similar set of habitats characterized the Chincha coast at that time. Cross-tabulating these habitats with Velez's tables produced a list of the 30 most common fish species for Chincha (*see* Table 36). Fresh specimens of each of these species were then collected, using Chirichigno's (1974) key for

Table 36.—*Taxonomic list of the 30 most common fish species in the Pisco area from the coastal pelagic, sandy to muddy benthic, and sandy to rocky benthic habitats (list compiled by Mariano A. [1984] from Velez [1975]). Compare this list with the taxa actually identified at Lo Demás (Table 35). Not included in this list are the order Squaliformes, of the superorder Euselachii and the class Chondrichthyes; this order, which consists of the sharks, did not form part of our comparative sample. However, shark vertebrae are quite distinctive, and Mariano identified several specimens in the Lo Demás sample (thus, "Squaliformes" appears in Table 35).*

Class: CHONDRICHTHYES
Superorder: SELACHOIDEA
Order: AMNIFORMES
Family: Triakidae
Mustelus mento ("tollo blanco")
Superorder: HIPOTREMATA
Order: RAJIFORMES
Family: Rhinobatidae
Rhinobatus planiceps ("guitarra")
Family: Rajidae
Psammobatis brevicaudatus ("pastelillo")
Family: Urolophidae
Urotrygon peruanus ("castelillo")
Family: Myliobatidae
Myliobatis peruvianus ("raya de punta")
Class: HOLOCEPHALI
Order: CHIMAERIFORMES
Family: Callorhindhidae
Callorhynchus callorhinchus ("peje gallo")
Class: OSTEICHTHYES
Subclass: ACTINOPTERYGII
Infraclass: TELEOSTOMA
Division I
Superorder: CLUPEOMORPHA
Order: CLUPEIFORMES
Family: Clupeidae
Brevoortia maculata ("machete")
Sardinops sagax ("sardina")
Family: Engraulidae
Engraulis ringens ("anchoveta")
Anchoa nasus ("anchoveta blanca")
Division III
Superorder: SILURIMORPHA
Order: SILURIFORMES
Family: Ariidae
Arius peruvianus ("bagre")
Superorder: PARACANTHOPTERYGII
Order: BATRACHOIDIFORMES
Family: Batrachoididae
Aphos porosus ("pez fraile")
Order: GADIFORMES
Family: Gadidae
Merlucius gayi peruanus ("merluza")
Superorder: ATHERINIFORMES
Order: ATHERINIFORMES
Family: Atherinidae
Odontesthes regia regia ("pejerrey")
Order: PERCIFORMES
Family: Malacanthidae
Caulolatilus princeps ("peje blanco")
Family: Carangidae
Trachurus symmetricus ("jurel")
Family: Haemulidae
Anisotremus scapularis ("chita")
Isacia conceptionis ("cabinza")
Family: Sciaenidae
Cynoscion analis ("ayanque," "cachema")
Menticirrus ophicephalus ("mis mis," "bobo")
Stellifer minor ("mojarilla")
Paralonchurus peruanus ("coco")
Sciaena gilberti ("lorna")
Family: Mugilidae
Mugil cephalus ("lisa")
Family: Mugiloididae
Mugiloides chiliensis ("bacalao," "camote")
Family: Scombridae
Sarda sarda chiliensis ("bonito")
Scomber japonicus peruanus ("caballa")
Family: Centralophidae
Seriolella violacea ("cojinoba")
Order: PLEURONECTIFORMES
Family: Bothidae
Etropus ectenes ("lenguado")
Order: TETRAODONTIFORMES
Family: Tetraodontidae
Sphoeroides annulatus ("pez globo," "tamborín")

identification. After removing the flesh and cleaning the bones, Mariano classified each of the skeletal elements according to species and type of bone.

The second phase of research was identification of fish bones from Lo Demás (Mariano, 1984, 1985, 1986). Using the comparative collection and published references, the remains from each provenience were first sorted by skeletal element; each bone was then identified to the lowest possible taxonomic level (order, family, genus, or species). Bones with no relationship to any of the available comparative material were listed by size of the fish (small or large fish).

The MNI for each taxonomic group from each provenience was also calculated, using the highest estimate available from counts of single, paired,[94] or multiple elements. However, for the analyses presented in this study, I use only the MNI for specimens identified to the species level, or to the genus level when no species of that genus were identified from the same provenience (*see* Table 37).

General Characteristics of the Lo Demás Fish Remains

This section covers taxonomy, habitat, and use of the fish taxa identified at Lo Demás. Table 35 provides a taxonomic chart of these fish. All of the species[95] inhabit the cool waters of the Humboldt

Table 37.—*Total NISP (Number of Identified Specimens) and MNI (Minimum Number of Individuals) by taxon for all analyzed fish samples from all stratigraphic complexes in Lo Demás (sample includes Subunits A1, A2, A3, B3, C3, 3B, and 10D in Sector I; Subunit 26D in Sector IV). MNI was aggregated by provenience and was calculated only for taxa identified to the genus or species level. A dash indicates that MNI was not calculated because of taxonomic level.*

	NISP	MNI
SQUALIFORMES	8	—
CLUPEIFORMES	9	—
Clupeidae	784	—
Brevoortia maculata	335	57
Sardinops sagax	2,582	456
Engraulidae	121	—
Engraulis ringens	2,253	624
Anchoa nasus	3	2
SILURIFORMES	—	—
Ariidae	1	—
PERCIFORMES	1	—
Haemulidae	12	—
Anisotremus sp.	77	26
Sciaenidae	219	—
Cynoscion analis	23	14
Paralonchurus peruanus	209	73
Sciaena sp.	389	92
Mugiloididae	16	—
Mugiloides sp.	17	7
Scombridae	33	—
Sarda sarda chiliensis	8	4
Centrolophidae	2	—
Medium size unidentified fish	302	—
Small size unidentified fish	302	—
Total	7,706	1,355

Table 38.—*Habitats and ranges of fish species identified from Lo Demás. Data from Mariano A. (1984) and Sánchez (1973).* [a] *The Peru or Humboldt Current flows north along the coasts of Chile and Peru until it reaches far northern Peru in the vicinity of Talara/Tumbes. Species with ranges listed as Peru Current are found throughout most of this area, unless a more limited area is defined.*

Species	Habitat
CLUPEIFORMES	
Brevoortia maculata	coastal pelagic
Sardinops sagax	coastal pelagic
Engraulis ringens	pelagic
Anchoa nasus	coastal pelagic
PERCIFORMES	
Anisotremus sp.	sandy/rocky benthic
Cynoscion analis	sandy/rocky benthic
Paralonchurus peruanus	benthopelagic
Sciaena sp.	sandy benthic
Mugiloides sp.	sandy/rocky benthic
Sarda sarda chiliensis	coastal pelagic

Species	Range
CLUPEIFORMES	
Brevoortia maculata	Peru (Peru Current)[a]
Sardinops sagax	Peru Current
Engraulis ringens	Peru Current
Anchoa nasus	transitional zone (North Peru/South Ecuador) and south into Peru Current
PERCIFORMES	
Anisotremus sp.	Peru Current
Cynoscion analis	Peru Current, north into transitional zone
Paralonchurus peruanus	transitional zone, south into Peru Current
Sciaena sp.	Peru Current along north and central coasts of Peru
Mugiloides sp.	Peru Current along south and central coasts of Peru
Sarda sarda chiliensis	Peru Current

Current, though some are more abundant in the transitional zone of northern Peru/southern Ecuador (Table 38), which corresponds to Olsson's (1961: 37–40) Paita Buffer Zone between the Panamic–Pacific and Peruvian Molluscan Provinces (*see* note 81). Of course, the comparative sample included only taxa found in the Chincha area today, and the unidentified specimens could well include exotic fish.

Also due to the restrictions of our comparative collection (and for the reasons outlined in the section on Methodology), all of the identified taxa inhabit the coastal pelagic zone, the sandy/muddy benthic zone, or the benthic sandy/rocky zone. However, the distribution of the comparative sample did not predict the overwhelming abundance of pelagic species in the remains, as determined by both Number of Identified Specimens (NISP) and Minimum Number of Individuals (MNI) (*see* Table 37). The pelagic (free-swimming) species represent 87.9% of the sample by NISP and 84.4% by MNI aggregated by provenience, based only on those specimens identified to the genus or species level.

The dominance of herbivorous, schooling pelagic fish—primarily sardines (*Sardinops sagax*) and *anchovetas* (*Engraulis ringens*)—in the Lo Demás sample probably resulted from the fishing technology employed by the Chincha fishermen; this technology is related, in turn, to the probable purpose of Chincha fishing—to acquire fish for tribute and trade as well as for subsistence. The excavated deposit at Lo Demás contained many net fragments but only one fishhook (*see* Chapter 8). In general, benthic species are caught with hooks, often from the shore, whereas herbivorous, schooling pelagic species are netted from the shore or from boats or rafts (Wing and

Brown, 1979:95). Thus, the fish remains from Lo Demás support the artifactual evidence indicating that the Chincha fishermen made most of their capture by netting. The "Aviso" (Rostworowski, 1970: 170) says that the Chincha fishermen went to sea "each with his raft and *nets*" (emphasis added), confirming the archaeological indications of the predominant technology.

Net fish serve industrial purposes better than hook fish, as they can provide a higher biomass in return for effort. Modern industrial fisheries, such as that which fueled the Peruvian fish boom in the 1950s and 1960s, rely exclusively on netting. Hook fish tend to be larger, providing more meat per "package," and in Peru today, they are considered better eating (e.g., the drums, Family Sciaenidae, including corvina). The predominance of pelagic net fish in the Lo Demás sample and the use of nets by the Chincha fishermen therefore suggest that late pre-Hispanic Chincha fishing had industrial ends,[96] in accordance both with the documentary evidence for the organization and scale of the fishing community (*see* Chapter 2) and with the archaeological evidence for fish salting and/or drying at Lo Demás.

In addition to the posthole pattern and the matting associated with salt crystals and fish scales (*see* Chapter 6), there is another, tentative line of evidence for fish salting at Lo Demás. Altamirano (1984) precipitated salts from the periosteum of fish bones and terrestrial animal bones from the 1983 excavations and found a visually greater amount of salt from the fish bones than from most of the animal bones. Although further work is necessary to assess the significance of this result,[97] the greater amount of salt on the fish bones suggests that the fish were salted.

The evidence for pre-Hispanic fish salting at Lo Demás has special importance, because of recent assertions that Andean fishermen did not salt fish before the arrival of the Spaniards (Marcus, 1987*a*: 397, 1987*b*:53, 56). Not only the Lo Demás archaeological data, but also the ethnohistoric record argue for pre-Hispanic salting. Rostworowski (1981: 118) cites a 1549 *visita* which mentions salt fish as tribute, and Masuda (1982:102) discusses the documentary evidence for three classes of fish preservation: in the sierra, fish was "freeze-dried," like chuño; on the Peruvian north coast and in northern Chile, fish was dried in the sun; and on the Peruvian south coast, fish was salted and dried. The coastal distribution of salting and drying versus simply drying may be related to the distribution of winter "garúa" (dense, permanent fog). Chincha is in the "garúa" zone, where salting would be expected.

The presence of a full range of skeletal elements shows that the fishermen eonsumed some of their catch, in addition to fishing for tribute and trade. In terms of the relative importance of the two uses of fish (industrial and domestic), the high percentage of whole heads and cranial elements in the sample (far more than the number of vertebrae would warrant) supports the idea that many of the fish were processed but not consumed at the site (*see* Tables 39 and 40).[98] Preparation of fish for long-distance trade should involve removing their heads and possibly their tails. Ethnographic observations of the Maori in New Zealand support this assumption: these observations led Shawcross (1967) to suggest that a predominance of fish heads in a prehistoric midden from New Zealand indicates preservation and transportation off-site of the rest of the fish.

None of the bones show signs of cultural modification, indicating that consumption and/or production for exchange or other purposes constituted the primary uses of fish at Lo Demás.

Quantitative Analysis

Objectives and limitations. —The quantitative analysis of fish remains can provide information on a number of topics: dietary contribution of the fish, production vs. consumption, fish processing techniques, and changing patterns of fish exploitation.

As with mollusks, dietary reconstruction from fish remains involves estimation of the original fish meat weight represented by the archaeological remains. Modern techniques for estimation are similar to those for mollusks in relying on allometric modelling and regression analysis (e.g., Casteel, 1976). Reitz et al. (1987) provide an up-to-date overview of allometry and meat weight analysis, with considerable attention to fish. The method has great promise, but experimental data for Peruvian species are not yet available. For this reason, and because of the lack of formulae for Peruvian terrestrial mammals and the methodological difficulties in estimating food value from botanical remains, I do not attempt to quantify the dietary contribution of fish to Lo Demás subsistence. Such an attempt would face several additional problems. First, the use of ¼" screen has biased the sample in ways that cannot be estimated until the fine-sereen analyses are complete. Second, I have no secure way to determine which of the fish bones came from fish consumed

Table 39.—*NISP (Number of Identified Specimens) of fish from Lo Demás by skeletal element and sector (sample includes Subunits A1, A2, A3, B3, C3, 3B, and 10D in Sector I; Subunit 26D in Sector IV). Data compiled from Mariano A. (1984, 1985, 1986). A dash indicates that a given element was not present in a sector. This table includes all specimens identified by skeletal element, regardless of taxonomic level. Cranial elements are marked with an asterisk.* [a] *The results for branchia underestimate the amount present in the site, because these elements tended to disintegrate on excavation; field notes indicate several large concentrations of branchia in Sector I, although none were noted in Sector IV.*

Element	Sector I		Sector IV	
	NISP	%	NISP	%
cranium*	84	1.4	5	0.3
neurocranium*	199	3.4	15	0.8
frontal*	72	1.2	—	—
parietal*	10	0.2	8	0.4
preoperculum*	190	3.2	—	—
parasphenoid*	24	0.4	8	0.4
exoccipital*	24	0.4	—	—
supraoccipital*	3	0.1	—	—
quadrate*	6	0.1	—	—
premaxillary*	3	0.1	1	0.1
maxillary*	532	9.0	66	3.7
dentary*	958	16.2	328	18.3
articular*	8	0.1	—	—
operculum*	623	10.5	134	7.5
suboperculum*	141	2.4	21	1.2
hyoid arch*	4	0.1	—	—
branchial arch*	190	3.2	9	0.5
shoulder girdle	7	0.1	—	—
cleithrum	253	4.3	75	4.2
pelvic girdle	12	0.2	—	—
basipterygoid	4	0.1	—	—
vertebral column	13	0.2	6	0.3
precaudal skeleton	10	0.2	2	0.1
precaudal vertebra	663	11.2	687	38.3
caudal skeleton	23	0.4	1	0.1
caudal vertebra	1,130	19.1	280	15.6
urophoral bones	204	3.5	—	—
otolith*	58	1.0	38	2.1
hyomandibular*	444	7.5	111	6.2
pharyngeal teeth*	6	0.1	—	—
branchial spines*[a]	13	0.2	—	—
Total NISP	5,911		1,795	

Table 40.—*Cranial versus postcranial elements of fish by sector from the Lo Demás sample, expressed as NISP (Number of Identified Specimens). Table 39 indicates which elements were considered as cranial or postcranial. Percentages refer to the proportion of cranial and postcranial elements in each sector (i.e., percentages read down, not across). The difference in the fraction of cranial elements observed in the two sectors is 14.45 standard deviations greater than the expected difference (0) under the null hypothesis that the two samples were drawn from the same parent population; statistically, the observed difference is extremely significant.*

	Sector I	Sector IV	Total
Cranial	3,592	744	4,336
	60.8%	41.4%	
Postcranial	2,319	1,051	3,370
	39.2%	58.6%	
Total	5,911	1,795	7,706

at the site and which came from specimens prepared for export.

The patterning of skeletal elements in an archaeological site can provide insight into prehistoric fish processing techniques and the question of production vs. consumption. Analysis of this patterning requires that each bone be classified by skeletal element and taxon, counted, and summed at each hierarchical level of provenience (provenience, complex, sector, site). As mentioned above, a predominance of cranial elements may indicate that fish heads were removed from the rest of the fish as part of the process of preparing preserved fish for export. An alternate interpretation (in addition to the bias introduced by screen size) is that the vertebrae of small fish were consumed by the site's inhabitants along with the flesh. At Lo Demás, however, the large number of vertebrae recovered (though far too few to account for the MNI indicated by the cranial elements) demonstrates that if such a practice took place, it was not universal. The bones alone cannot determine which of the alternatives is correct; other classes of data are necessary.

Finally, recognition of changing patterns of fish use requires calculating the relative frequencies of different species through time in a stratified archaeological deposit. As with the mollusks, identifying and counting the sample is straightforward; problems arise at the interpretive stage because of the difficulty in assessing cultural preference vs. natural availability in midden formation (*see above,* discussion of natural versus cultural changes in the section on Quantitative Analysis of mollusks). To differentiate some of the changes due to preference from some of those resulting from availability, I have used the same assumption as for the mollusks: *changes in frequency of species in a stratigraphic sequence reflect changes in availability rather than preference when all of the involved species remain well represented in the contrasting archaeological levels.*

The above assumption does not apply to contrasting frequencies between different parts of a site when the exact contemporaneity of the strata in each part of the site cannot be established. Interpretations based on such contrasts are more general and less secure than those drawn from changes within a sin-

Table 41.—Sardinops sagax *versus* Engraulis ringens, *Lo Demás Sector I, Stratigraphic Complexes A to D, by NISP and by MNI. Counts are absolute, percentages are relative to all fish remains from each stratigraphic complex. Compare to Fig. 56, which plots* Sardinops *against* Engraulis *for Complexes B to D.*

	A		B		C		D	
	NISP	%	NISP	%	NISP	%	NISP	%
S. sagax	7	35.0	172	17.2	750	27.3	1,194	55.7
E. ringens	0	0.0	363	36.3	1,032	37.6	472	22.0
	A		B		C		D	
	MNI	%	MNI	%	MNI	%	MNI	%
S. sagax	1	25.0	17	14.8	69	22.2	147	52.9
E. ringens	0	0.0	81	70.4	210	67.5	121	43.5

gle stratigraphic sequence. Even when contemporaneity of strata is clear, different functional contexts of different parts of a site introduce new possibilities for cultural explanations of contrasting frequencies. As with the mollusks, comparison of the fish assemblages from Sector I (common residences) and Sector IV (elite structures) of Lo Demás provides a case in point (*see below*).

Analysis by stratigraphic complex in Sector I.—For this analysis, the different members of each stratigraphic complex in Sector I were pooled into complex totals, in order to see changes through time in predominant fish taxa (Sandweiss, 1989:Tables 47–50).

One major change takes place in the stratigraphic sequence in Sector I: in the latest Complex, D, sardines (*Sardinops sagax*) replace *anchovetas* (*Engraulis ringens*) as the dominant species in terms of both NISP and MNI (Table 41, Fig. 56). Anchovetas had dominated the fish remains in two lower complexes (B and C). This shift parallels the change in the shell remains from *Donax* to *Semimytilus* predominance between Complexes C and D.

As with the mollusks, the differences in the frequencies of sardines and *anchovetas* between Complexes C and D are, in statistical terms, almost certainly due to real differences in the parent populations and are not the result of random variation (*see* Table 42). This result holds true for the fish when compared by NISP, MNI aggregated by complex, and MNI aggregated by provenience. The difference between Complexes B and C (in both of which anchovetas dominate) for NISP is statistically significant, as it was for the mollusks. For MNI aggregated either by complex or by provenience, however, the difference between B and C is much less significant ($P > 0.10$ and $P > 0.20$, respectively). In other words, not only is the difference between C and D (the sardine/*anchoveta* reversal) large and real, but B and C are much more similar to each other than either is to D.

In accordance with the assumption about changes in species frequencies, the sardine/*anchoveta* reversal represents a change in the availability of these species rather than in dietary preference. However, interpretation of the change presents greater ambiguities than did the shift in shells, because fish are not restricted to such narrowly defined habitats as are mollusks. The fact that the frequencies of *anchovetas* and sardines change concurrently with the molluscan frequencies argues against a natural change limited to the shoreline as the explanation, while the molluscan data argue against climate change—which *can* affect the relative abundance of sardines and *anchovetas*. The key question, then, is whether the construction of a pier (as suggested by the molluscan data)—or the motives underlying such a project—might mediate a technological or cultural alteration in the relative availability of these fish. Although both species can be found together near the shore, sardines range farther offshore than do *anchovetas* (Mariano, 1984). A pier would allow the use of larger craft capable of going further out to sea for more time than the *caballitos* (small, single person fishing rafts traditionally used by Andean fishermen) that can be launched from the shore. However, both sardines and *anchovetas* are often reported together, and both can be taken close to the shore with a similar net-fishing technology. Despite this ambiguity, the exact concurrence in the reversal of dominant species of both phyla (mollusks and fish) supports a culturally mediated cause of change in availability (not in preference) and thus supports the "pier" hypothesis proposed on the basis of the molluscan data.

Analysis by sector.—The samples of fish remains from Sectors I and IV of Lo Demás are similar in broad outline, but show a number of interesting

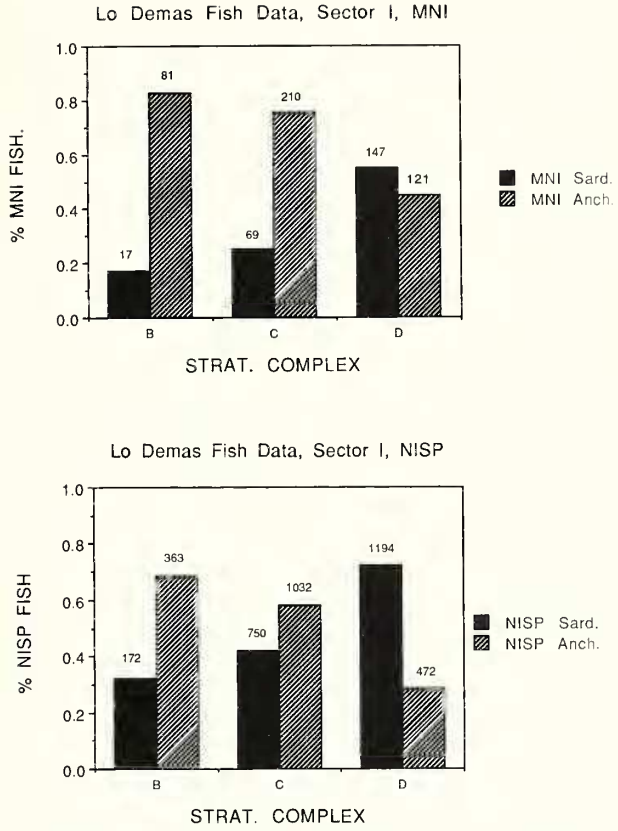


Fig. 56.—Relative abundance of sardines (*Sardinops sagax*) and *anchovetas* (*Engraulis ringens*) in the sample from Stratigraphic Complexes B, C, and D in Sector I of Lo Demás, by MNI and by NISP. Histograms show percent of sardines and *anchovetas* in each level; in calculating the percentages, only these two species were used. The numbers above the histograms show the absolute abundance of each species in each complex.

differences at a more detailed level (Tables 39, 40, 43, 44, 45).

Relative to Sector I, Sector IV has a significantly higher percentage of Clupeiformes relative to Perciformes among the specimens identified to genus

Table 42.—*Statistical analysis of the variation in frequency of* Sardinops sagax sagax *(sardine) relative to* Engraulis ringens *(anchoveta) between stratigraphic complexes in Sector I, Lo Demás. Analyses were run on the data for the NISP, MNI aggregated by stratigraphic complex (SC), and MNI aggregated by provenience (pr.). Results are reported as the observed difference in the percentage of* Sardinops *between two levels expressed as standard deviations from the expected difference (0) based on the null hypothesis that each pair of complexes was drawn from the same parent population.*

Between Complexes	Number of Standard Deviations		
	NISP	MNI (SC)	MNI (pr.)
C and D	17.50	7.21	6.85
B and C	4.12	1.27	1.56

Table 43.—*Fish remains from Sector I, Lo Demás (sample includes Subunits A1, A2, A3, B3, C3, 3B, and 10D), expressed as NISP (Number of Identified Specimens) and as MNI (Minimum Number of Individuals) aggregated by provenience (pr.), stratigraphic complex (SC), and sector total (Sr.); MNI is provided only for taxa identified to the species level, or to the genus level if no species of that genus is present. A dash means not applicable.*

Taxon	NISP	MNI (pr.)	MNI (SC)	MNI (Sr.)
Order Squaliformes	8	—	—	—
Order Clupeiformes	9	—	—	—
Family Clupeidae	252	—	—	—
Brevoortia maculata	287	46	18	15
Sardinops sagax	2,123	326	234	233
Family Engraulidae	121	—	—	—
Engraulis ringens	1,867	488	412	412
Anchoa nasus	3	2	1	1
Family Ariidae	1	—	—	—
Order Perciformes	1	—	—	—
Family Hacmulidae	9	—	—	—
Anisotremus sp.	46	18	4	3
Family Sciaenidae	180	—	—	—
Cynoscion analis	18	10	3	2
Paralonchurus peruanus	146	38	16	14
Sciaena sp.	211	59	16	14
Family Mugiloididae	16	—	—	—
Mugiloides sp.	11	5	2	1
Family Scombridae	33	—	—	—
Sarda sarda chiliensis	8	4	2	1
Family Centrolophidae	2	—	—	—
Medium-sized unidentified fish	260	—	—	—
Small-sized unidentified fish	299	—	—	—
Total	5,911	996	708	696

or species (Table 45). Most Clupeiformes are small, herbivorous, schooling, pelagic fish usually caught with nets; at Lo Demás, sardines (*Sardinops sagax*) and *anchovetas* (*Engraulis ringens*) dominate this taxonomic order.[99] The Perciformes are larger and at Lo Demás are represented primarily by drums (*Paralonchurus peruanus* and *Sciaena* sp.) and a grunt (*Anisotremus* sp.).[100] Most of the Perciformes at Lo Demás are benthic species best caught with hooks. Both Clupeiformes and Perciformes can be caught close in to the shore (E. Reitz, personal communication, 1988). As Table 45 shows, Perciformes make up a much higher percentage of those remains identified to genus or species level in Sector IV (24.1%) than in Sector I (9.3%). In Peru today, the Perciformes are preferred to the Clupeiformes for eating, because of their size, lower ratio of bones to flesh, and the quality of their flesh. The higher frequency of Perciformes in Sector IV suggests that the elite inhabitants of Lo Demás had privileged (differential) access to preferred species, a hypothesis supported by the molluscan data (*see above*).

Table 44.—*Fish remains from Sector IV, Lo Demás (Subunit 26D), expressed as NISP (Number of Identified Specimens) and as MNI (Minimum Number of Individuals) aggregated by provenience (pr.) and sector (Sr.); MNI is provided only for taxa identified to the species level, or to the genus level if no species of that genus is present. A dash means not applicable.*

Taxon	NISP	MNI (pr.)	MNI (Sr.)
Order Clupeiformes			
Family Clupeidae	532	—	—
Brevoortia maculata	48	11	3
Sardinops sagax	459	81	48
Engraulis ringens	386	139	120
Order Perciformes			
Family Haemulidae	3	—	—
Anisotremus sp.	31	8	2
Family Sciaenidae	39	—	—
Cynoscion analis	5	4	1
Paralonchurus peruanus	63	29	18
Sciaena sp.	178	35	13
Mugiloides sp.	6	2	1
Medium-sized unidentified fish	42	—	—
Small-sized unidentified fish	3	—	—
Total	1,795	309	206

A second pattern which emerges from the fish data is the significant difference in the proportion of cranial versus post-cranial elements between Sectors I and IV (*see* Tables 39, 40); Sector IV has a much lower frequency of cranial elements. Considering the probable relationship between a high proportion of cranial elements and the preparation of fish for export (*see above*), the lower frequency of cranial elements indicates that consumption and not fish processing was the primary Sector IV use of fish (to the extent that the Subunit 26D can be taken as representative of the sector). The lack of nets and other features directly related to fishing and fish-processing (except for one possible bone *mallero*) supports this interpretation (*see* Chapters 6 and 8).

The final comparison between Sectors I and IV concerns stratigraphic changes in relative abundance of sardines and *anchovetas*. The proportion of sardines relative to *anchovetas* throughout the sequence in Subunit 26D does not correlate unambiguously with the *Donax/Semimytilus* proportions. The molluscan data show a shifting *Donax*: *Semimytilus* ratio tentatively correlated with Complexes B/C and D in Sector I (*see above*). The pattern for the fish in Subunit 26D is much less regular—the predominant species (by NISP)[101] changes twelve times from bottom to top of the sequence. Much of this noise disappears when only strata with NISP counts of 25 or greater are used (five reversals; *see* Fig. 57). However, the pattern which emerges contradicts the tentative correlation between sectors based on mollusks. A reversal occurs within the proveniences which, according to the molluscan data, should correspond to Complex D in Sector I; in most of the proveniences which should correspond to Complexes B and C, sardines predominate. In these complexes in Sector I, *anchovetas* were the dominant species. The correlation based on mollusks may be wrong, but the ceramics and (to a degree) the carbon-14 dates indicate that the two sectors are at least roughly contemporaneous. The lack of correlation of the fish and molluscan remains may well be due to the different functional contexts of the two deposits. The need for large quantities of *anchovetas* and sardines for processing in Sector I would have linked the inhabitants of this sector more closely to fluctuations in availability, while the privilege of selection (differential access) for consumption enjoyed by the Sector IV elites would have insulated them from variations in abundance. There is no

Table 45.—*Comparison of Clupeiformes versus Perciformes fish by NISP between Sectors I and IV, Lo Demás (sample includes subunits A1, A2, A3, B3, C3, 3B, and 10D in Sector I; Subunit 26D in Sector IV). Percentages refer to the proportion of Clupeiformes and Perciformes in each sector (i.e., percentages read down, not across). Results are reported in Part c as the observed difference in the percentage of Clupeiformes between the two sectors expressed as standard deviations from the expected difference (0) based on the null hypothesis that the samples from both sectors were drawn from the same parent population. Although the difference is greater for the data limited to generic or specific identification, the difference in both cases is statistically highly significant.*

a) Data for specimens identified to the genus or species level

Order	Sector I	Sector IV	Total
Clupeiformes	4,280	893	5,173
	90.7%	75.9%	
Perciformes	440	283	723
	9.3%	24.1%	
Total	4,720	1,176	5,896

b) Data for specimens identified to the order, family, genus, or species level

Order	Sector I	Sector IV	Total
Clupeiformes	4,662	1,425	6,087
	87.3%	81.4%	
Perciformes	681	325	1,006
	12.7%	18.6%	
Total	5,343	1,750	7,093

c) Observed difference in percentage of Clupeiformes between Sectors I and IV

Identification Level	# of Standard Deviations
Genus/Species (A)	13.80
Order-Species (B)	6.06

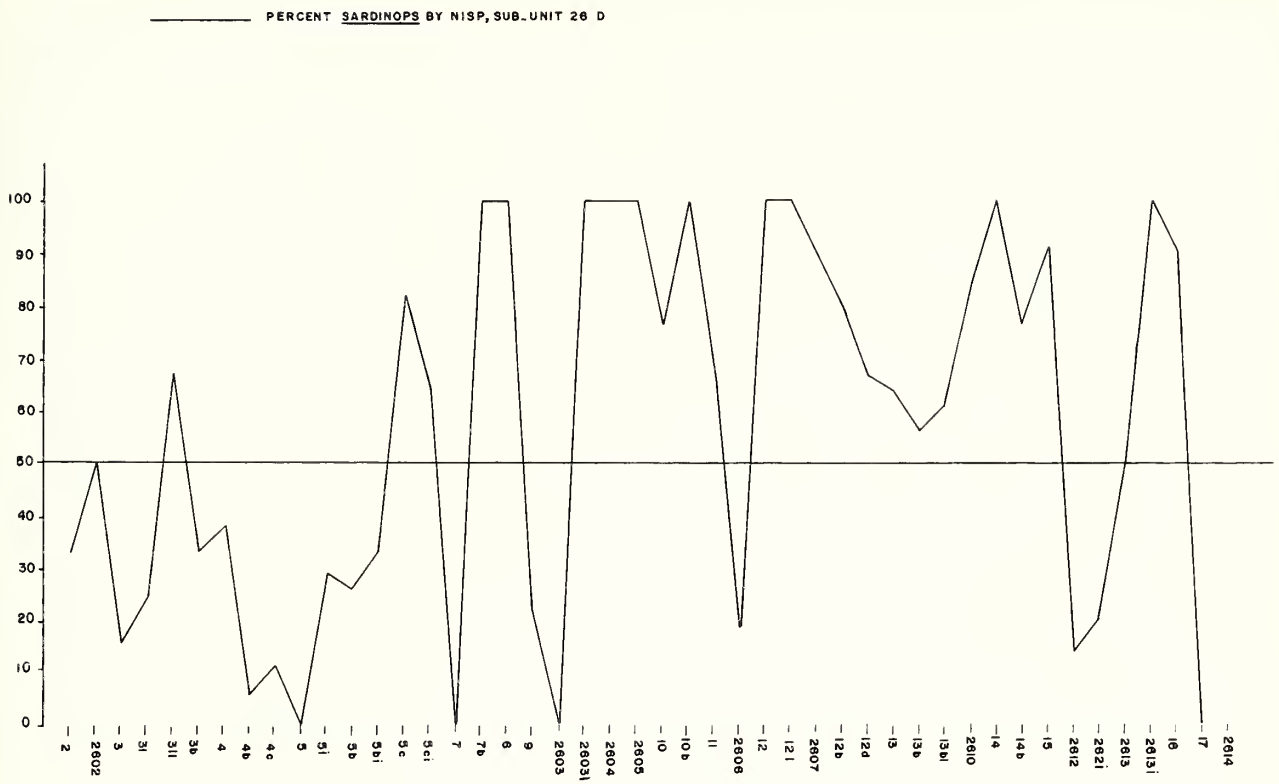


Fig. 57.—Percent of sardines (*Sardinops sagax*) relative to *anchoveta* (*Engraulis ringens*) by level in Lo Demás, Sector IV, Subunit 26D, for NISP. Only levels with a NISP of 25 or greater are shown.

evidence that mollusk meat was produced for export, so the mollusks would not have been subject to the same constraints.

Crustaceans

Lo Demás did not contain many crustaceans; the few remains tended to be small bits of crab carapace or claws (barnacles—also rare—were analyzed with the mollusks). A. Kameya K. (Instituto del Mar del Peru, Callao) identified the larger pieces from the 1983 excavation; given the limited nature of the remains, I use only the presence/absence criterion in analyzing these data. Crab remains from the 1984 excavations have not yet been studied. The 1983 crustaceans came from eleven proveniences within Complex D and one provenience within Complex C (Complex B was not present in the 1983 excavations). In addition, one specimen came from the surface debris covering Complex D.

Pieces of a purple crab (*Platyxanthus* sp., probably *P. orbignyi*) were identified in ten of the eleven proveniences from Complex D and in the Complex C provenience. *Platyxanthus* is a medium-sized crab which lives along the shore from the intertidal zone to about 25 m depth and ranges along the Andean coast from San Antonio, Chile, to Salaverry, Peru (Mendez, 1982), or possibly Ecuador (Sánchez Romero, 1973:364). Rock crabs of the family Grapsidae were also identified in four of the Complex D proveniences. Chirichigno (1970) lists 17 Peruvian species of Grapsidae.

The crab remains provide little information about the use of crustaceans by the inhabitants of Lo Demás; they do provide some data on the marine environment at the time of occupation. In a study of the utility of arthropod chitin in paleoenvironmental reconstruction, Arndt Schimmelmann ran stable isotope analyses ($\delta\ ^{13}C$, $\delta\ ^{15}N$, $\delta\ ^{18}O$, and δ D) on chitin in *Platyxanthus* specimens from seven of the 1983 proveniences at Lo Demás (Schimmelmann et al., 1986:562) (*see* Fig. 58). Although Schimmelmann did not have modern samples of *Platyxanthus orbignyi* for comparison, he and his colleagues found that the results for the archaeological samples closely resembled data on the Peruvian lobster *Panulirus gracilis,* which lives in a habitat similar to that of *Platyxanthus* (Schimmelmann et al., 1986). These data suggest that marine climatic conditions at

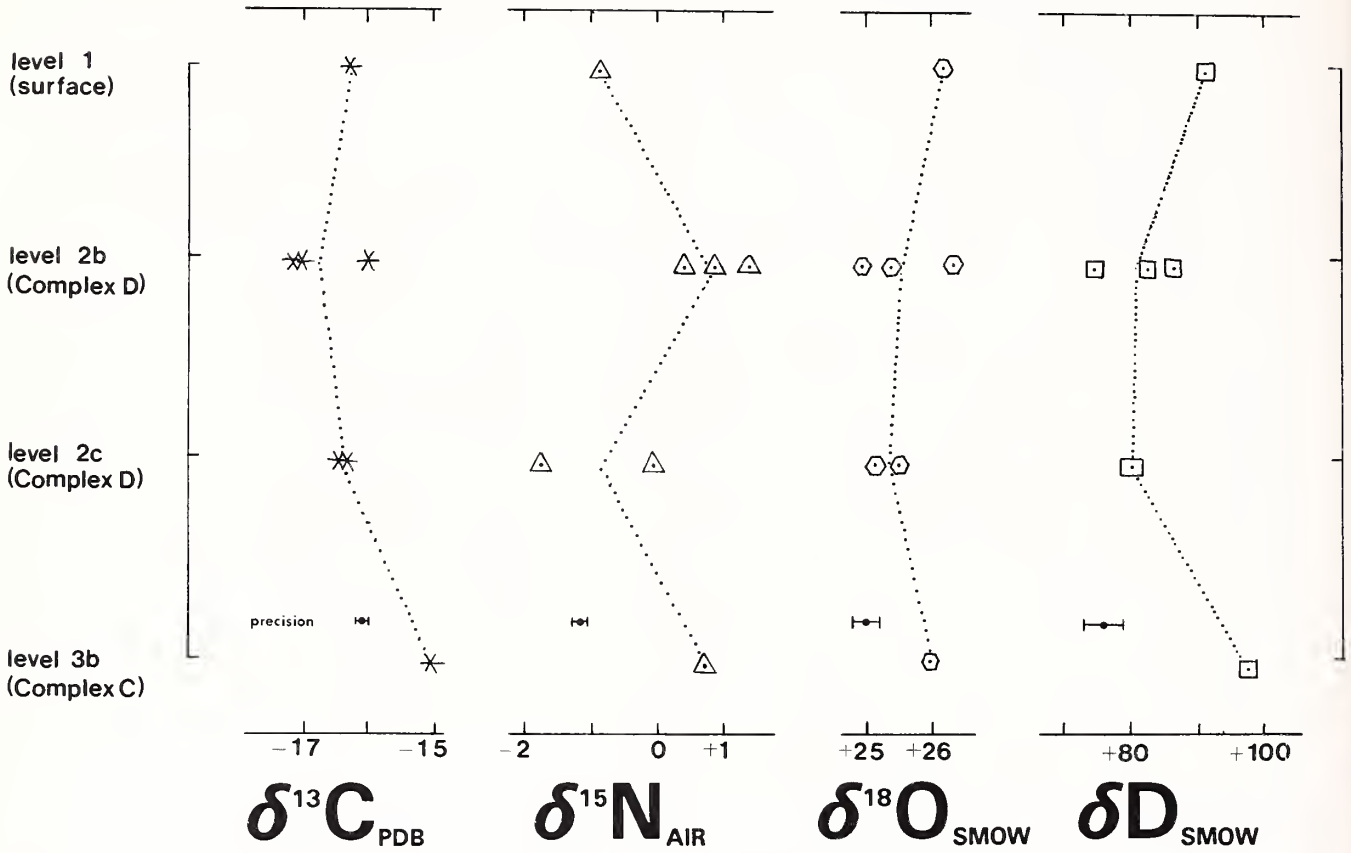


Fig. 58.—Data on stable isotope analyses of crab chitin from Lo Demás. Adapted from Schimmelmann et al. (1986:562).

Chincha in the Late Horizon closely resembled modern conditions on the Peruvian coast.

Fig. 58 shows very similar results for $\delta\ ^{13}C$, $\delta\ ^{18}O$, and δ D between the two Complex D proveniences and noticeable differences in $\delta\ ^{13}C$ and δ D between the Complex D proveniences and the Complex C provenience. This trend could indicate a slight change in the marine environment between the two complexes, at the same time as the *Donax/Semimytilus* and *Sardinops/Engraulis* reversals occur. However, Schimmelmann (personal communication, 1985) writes that

> "I am very skeptical about the significance of the small isotopic differences between the levels. My interpretation is the following: "All samples from all levels measured (for all isotope ratios) show a remarkably *constant* signal which excludes large environmental changes, especially large fluctuations in the influx of terrestrial carbon as [a] food source, and in the isotopic composition of the water where the animals lived. No direct conclusion can be reached about constancy of temperature at the site. The observed isotopic variabilities are in the ranges of natural variabilities within populations of individuals from *one* modern site."

Thus, the isotopic data from the Lo Demás crab chitin support the suggestion from the mollusk and fish data that climate change between Complexes C and D does not account for the *Donax/Semimytilus* and *Sardinops/Engraulis* reversals.

Vertebrate Remains Other Than Fish

Non-fish vertebrates recovered from Lo Demás include birds, sea mammals, and land mammals (including *Homo sapiens*).[102] In comparison with the fish and mollusks, remains of these animals are scarce and therefore offer more limited information.

The faunal remains covered in this section come from the same primary midden contexts as the fish and mollusks. The studied sample includes all of the bones recovered in the ¼" screen from the 1983 test excavations (Sector I), from Subunits 3B and 10D (Sector I), and from Subunit 26D (Sector IV) Subunit 26D was treated as a single stratigraphic complex.

Alfredo Altamirano E. (Laboratorio de Paleoetnozoología, San Marcos University, Lima, Peru)

identified the remains covered in this section (Altamirano E., 1984, 1986). Lacking extensive comparative collections, the specific identifications of fauna other than large terrestrial mammals and guinea pigs (*Cavia porcellus*) should be considered as tentative. Altamirano identified 712 (57.5%) of the 1,238 bones in the sample to the genus or species level. Another 185 specimens (14.9%) could be classified to the family level or as bird, sea bird, marine mammal, mammal, turtle, or lizard. Only 336 (27.1%) of the bones came from the Sector I sample; the rest (902) came from Subunit 26D in Sector IV.

Table 46 lists the families, genera, and species of the identified bones, along with their common names. Most of the birds would have lived along the shore or in the marshy ground that lay between Lo Demás and the beach (*see* Chapter 5), as would the frogs and turtles. The doves, or palomas (*Zenaida* sp.) live in the valley. The wild rodents (unidentified mouselike rodents) were probably endemic to all coastal areas of human occupation, while the animal coprolite evidence (*see below*) shows that the domesticated guinea pigs (*Cavia porcellus*) lived with the site's human inhabitants. Furthermore, the intact or nearly intact bodies of seven guinea pigs were found in the Sector I deposits. The animal coprolite evidence also shows that camelids were brought live to Sector IV but not to Sector I. This limited distribution, and the apparent function of camelids as beasts of burden, argue in favor of the camelids being domesticated. The marine mammals generally live along rocky shores and were probably brought to Lo Demás from the same areas as some of the imported mollusks, i.e., Paracas, the Chincha islands, and/or possibly the coast between Jahuay and Cañete.

Five of the intact guinea pigs in Sector I are from Complex C and one each is from Complexes A and B. All of the examples had some fur, and several of them were so well preserved as to include whiskers. The presence of the fur and the generally intact nature of these guinea pigs shows that they were not eaten by the inhabitants of Lo Demás, though the presence of disarticulated *Cavia* bones (some charred) shows that other guinea pigs had been consumed. The stomach of one of the specimens from Complex C had clearly been slit (Fig. 59); the same may have happened with several of the others. *Curanderos* (healers) in the Andes today use guinea pigs as diagnostic tools by rubbing the live animal on the body of a patient and then slitting the guinea pig's stomach to study the entrails (e.g., Bolton and Calvin, 1981:315–316); guinea pigs used in this way are usually not eaten. Ethnohistoric data indicate that the same practice was carried out in late pre-Hispanic times (Alfredo Torero, personal communication, 1984). Guinea pigs were also used for sacrifices; Arriaga (1968 [1621]:210) wrote that

> "the ordinary sacrifice is of guinea pigs, of which they make evil use, not only for sacrifices but also to divine with them and to cure with them . . . . When they have to sacrifice them, sometimes they open them along the middle with the nail of the thumb. . . ."[103]

Polo (1906 [1559]:198) also wrote about the Andean practice of cutting open various animals—including guinea pigs—to study their entrails for good or bad omens; guinea pigs for sacrifice were to be domestic, not wild (Polo, 1906 [1559]:226).

The discovery in Lo Demás of intact guinea pigs with slit stomachs argues strongly for the presence

Table 46.—*List of vertebrate taxa other than fish identified from Lo Demás. Data from Altamirano E. (1984, 1986).*

Aves
Pelecanidae
Pelecanus sp. (pelican)
Phalacrocoracidae
Phalacrocorax sp.
Sulidae
Sula variegata
Columbidae
Zenaida sp.
Laridae
Larus belcheri
Mammalia
Hominidae
Homo sapiens (human)
Cricetidae
unidentified small mouse
Caviidae
Cavia porcellus (guinea pig)
Canidae
Canis sp. (dog)
Mustelidae
unidentified otter
Otariidae
Otaria sp. (sea lion)
Camelidae
Lama glama (llama)
Cervidae
Odocoileus virginianus (white-tail deer)
Bovidae
Bos taurus (cow)
Other
Batrachophrynus sp. (frog)
unidentified turtle
unidentified lizard

Fig. 59.—Guinea pig with slit stomach, Level 3–6, Subunit 3A, Complex C, Sector I, Lo Demás, Cat. 887.

of a *curandero* or ritual specialist at the site during the Late Horizon, though perhaps only during the time covered by Complexes A through C.

We also found an intact guinea pig underneath the child burial in Sector II. This specimen had been sacrificed by having its throat slit. The coarse components of the stomach contents of the adult human buried alongside the child contained 20% masticated dicot fibers and 15% *Capsicum annuum* (hot pepper) seeds (Jones, 1985, 1986), both of which may have had medicinal use (John G. Jones, personal communication, 1985). Although the data from the burials must be treated with caution until the graves can be securely cross-dated with the Late Horizon occupation in Sectors I and IV, they do provide further evidence for the presence of a *curandero* at Lo Demás.

During the excavation in 1983, we uncovered an intact bird body deliberately buried beneath a floor in Complex C (Fig. 15). Altamirano (1984) identified this bird as a grey-headed albatross (*Diomedea chrysostoma*). According to Tovar (1974), this species lives by robbing fish from other birds, and the fishermen may have considered it an important totemic symbol. Another intact bird (unidentified) was buried under an unexcavated wall in Complex C in the 1983 excavation area, and wall paintings of several seabirds were found in Room IV–1a in Building IV–1 in the elite Sector (IV) of Lo Demás (*see* Chapter 6, Figs. 16, 17). A piece of pyroengraved gourd from Sector I, Complex C, also has figures of birds (Chapter 8, Fig. 44), as does the copper tweezers from the Pachas collection (Chapter 8, Fig. 40).

The few bone artifacts from the excavations are treated in Chapter 8. Among the rest of the bones, modifications include charring and evidence of biting or gnawing. Several large bones from Subunit 26D in Sector IV showed cut marks, as did several bones from Sector I (*see* Sandweiss, 1989:Table 56).

Table 47 presents the NISP counts by stratigraphic complex (in Sector I), the Sector I totals, the Subunit 26D counts, and the site total.[104] Because of potential sample size and aggregation effects due to the small size of the sample (*vide* Grayson, 1984),

Table 47.—*NISP (Number of Identified Specimens) of vertebrate taxa other than fish from Lo Demás, listed by stratigraphic complex (in Sector I), by sector totals, and by site total (sample includes Subunits A1, A2, A3, B3, C3, 3B, and 10D in Sector I; Subunit 26D in Sector IV). Data from Altamirano E. (1984, 1986). A dash indicates no specimen.* [a] *The one specimen identified as probably* Bos taurus *is a small square of hide found near the surface of Stratigraphic Complex D. See text for discussion.*

Taxon	Complex				Sector Totals		Site Total
	A	B	C	D	I	IV	
Laridae	—	—	12	3	15	32	47
Larus belcheri	—	—	2	1	3	—	3
Larus sp.	—	—	2	—	2	—	2
Phalacrocoracidae	—	—	6	—	6	—	6
Phalacrocorax sp.	—	9	28	18	55	79	134
Pelecanus sp.	—	3	3	1	7	25	32
Sula variegata	—	1	2	11	14	5	19
Sula sp.	—	1	3	—	4	14	18
Zenaida sp.	—	—	1	13	14	1	15
unidentified seabird	3	6	22	12	43	—	43
small unidentified seabird	—	3	1	4	8	8	16
medium unidentified seabird	—	—	—	7	7	44	51
large unidentified seabird	—	1	—	—	1	—	1
unidentified bird	—	—	1	—	1	—	1
small unidentified bird	—	4	—	—	4	—	4
medium unidentified bird	—	2	2	—	4	—	4
large unidentified bird	—	—	1	—	1	—	1
Otariidae	—	—	1	—	1	—	1
Otaria sp.	—	—	—	—	—	21	21
unidentified otter	—	2	11	—	13	1	14
unidentified marine mammal	—	—	—	—	—	6	6
Camelidae	—	—	—	—	—	48	48
Lama glama	—	—	—	—	—	7	7
Lama sp.	—	—	—	—	—	11	11
Odocoileus virginianus	—	—	—	—	—	1	1
Canis sp.	—	1	1	—	2	—	2
Bos taurus[a]	—	—	—	1	1	—	1
Mustelidae	—	—	1	—	1	—	1
unidentified small mouse	10	16	14	34	74	247	321
Cavia porcellus	—	4	3	6	13	26	39
unidentified mouse	—	—	—	—	—	20	20
Cavia sp.	—	—	—	3	3	5	8
Homo sapiens	4	—	—	—	4	5	9
medium unidentified mammal	—	—	1	—	1	3	4
unidentified frog/toad	—	—	—	—	—	2	2
Batrachophrynus sp.	—	—	1	—	1	34	35
unidentified turtle	—	—	1	1	2	—	2
unidentified lizard	—	—	1	3	4	—	4
unidentified bones	—	11	4	12	27	257	284
Total	17	64	125	130	336	902	1,238

I do not list MNI for the non-fish bones. For these remains, MNI did not differ significantly from NISP when aggregated by provenience. The small size of the Sector I sample also precludes meaningful interpretations of the variation by stratigraphic complex within Sector I, but some interesting patterns are apparent in the contrasts between the samples from Sectors I and IV.

As Table 48 shows, birds (mostly seabirds) comprise the majority of the bones in Sector I, where they are almost twice as frequent as in Sector IV. Sea mammals have equal representation in the two zones, but the large terrestrial mammals (mainly camelids) are over four times as frequent in Sector IV. No camelid or cervid bones were present in Sector I, where the large terrestrial mammal sample consists of four human bones, two dog bones, one unidentified mammal bone, and a small piece of hide (probably cow) from a near-surface provenience in Complex D.[105] Many of the camelid bones in Sector IV are burnt, and some show cut marks (*see* Sandweiss, 1989:Table 56), indicating that the

Table 48.—*Comparison of vertebrate fauna other than fish between Sectors I and IV, Lo Demás, by major faunal category. Data compiled from Table 47. Completely unidentified bones (27 in Sector I, 257 in Sector IV) were not used in calculating the totals and percentages presented below.*

Faunal Category	Sector I		Sector IV	
	NISP	%	NISP	%
birds	189	61.2	208	32.2
large land mammals	8	2.6	75	11.6
sea mammals	14	4.5	28	4.3
rodents	91	29.4	298	46.2
other	7	2.3	36	5.6
Total	309		645	

inhabitants of Sector IV ate camelid meat. The one cervid bone, a rib of the deer *Odocoileus virginianus,* also came from Sector IV (Subunit 26D) and shows cut marks. The bones thus provide further evidence for differential access to subsistence resources by the elite residents of Sector IV.

Rodent bones are significantly more common in Sector IV than in Sector I (Table 48), although domesticated guinea pig bones (*Cavia* sp. and *Cavia porcellus*) have about the same frequency in the two sectors (5.2% in Sector I, 4.8% in Sector IV). The difference comes with the wild rodents (24.3% in Sector I, 41.4% in Sector IV). Altamirano (1986) suggests that the wild rodents in the Lo Demás sample came to the site as scavengers, not as a hunted food source for the human inhabitants. If so, the difference between the sectors may indicate that the rodents found more food in Sector IV, perhaps due to more stored agricultural produce. However, the small size of the sample and the much larger number of unidentified bones in Sector IV[106] argue for caution in interpreting this statistic.

Animal Coprolites

Animal coprolites provide the final class of faunal data available from Lo Demás. In 1985, Jeffrey D. Klausner studied the animal feces from Subunit 10D in Sector I and Subunit 26D in Sector IV. He began by making a comparative collection of modern guinea pig, sheep, goat, llama, and burro feces. Sheep and goat were very similar, and as a group, the caprine (sheep/goat) sample included specimens that closely resembled some of the llama specimens. The difficulty in distinguishing between European and Andean domesticates is the major limitation on the utility of the coprolite data.

Animal coprolite specimens from Lo Demás were identified as sheep/goat, llama, guinea pig, and unknown.[107] Differences occur between the stratigraphic complexes in Subunit 10D (Sector I), and within the stratigraphic sequence in Subunit 26D (Sector IV), and between the samples from the two sectors.

In Sector I, guinea pig feces comprise almost the entire sample (Table 49a). Only two fragments were identified as llama feces and 29 specimens (1 whole, 28 fragments) were of unknown types. Nearly all of the coprolites came from Stratigraphic Complex B, while Complexes A and D have virtually no specimens. Future work with the Lo Demás remains will include studying a larger sample of animal coprolites to determine whether or not the stratigraphic distribution of these remains in Subunit 10D is representative of the rest of the excavated area. For the moment, the percentage of proveniences containing any animal coprolites in each stratigraphic complex (presence/absence) provides weak support for the pattern shown by the Subunit 10D sample (*see* Sandweiss, 1989:Table 60); both the percentage of proveniences with coprolites and the percentage of coprolites in 10D have the same rank order by complex.

The lack of guinea pig feces in Complex D correlates with the lack of guinea pig corpses in that complex. However, the studied sample of animal bones from Sector I contained more *Cavia* bones in Complex D than in Complexes A to C combined (of course, the total number of *Cavia* bones in Sector I samples was only 16; *see* Table 47). These data suggest that although guinea pigs were eaten during the occupation of Complex D, fewer (or no) live guinea pigs were kept in the excavated area of Sector I during that time. This pattern may indicate that the *curandero* who was present at the site during Complexes A through C was not there during Complex D.

In contrast to the sample from Sector I, the animal coprolites from Sector IV have a very high proportion of llama feces in addition to guinea pig specimens (Table 49b). Llama feces probably comprise the majority of the unidentified specimens from Subunit 26D. The presence of llama feces indicates that these animals came to Lo Demás alive; however, they were restricted to the monumental sector of the site. This contrast between the two sectors of Lo Demás provides another indication of the differential or privileged access to resources exercised by the elite inhabitants of Sector IV.

Although the Sector IV sample contains a few camelid bones (some with cut marks), the presence

Table 49.—*Animal coprolite data from Lo Demás. a) Summary of coprolite data from Subunit 10D in Sector I, by stratigraphic complex. b) Summary of coprolite data from Subunit 26D, Sector IV. A dash indicates not present.*

a) Subunit 10D, Sector I

Complex	Guinea Pig		Llama		Unknown	
	Whole	Fragment	Whole	Fragment	Whole	Fragment
A	2	—	—	—	—	—
B	2,975	357	—	1?	1	—
C	17	7	—	—	—	28
D	—	—	—	1	—	—
Total	2,994	364	—	2	1	28

b) Subunit 26D, Sector IV

Guinea pig		Goat/Sheep		Goat/Sheep or Llama		Llama		Unknown	
Whole	Fragment	Whole	Fragment	Whole	Fragment	Whole	Fragment	Whole	Fragment
3,177	1,189	841	82	69	2	2,151	390	1,182	2,542

of the feces in the monumental part of Lo Demás probably has more to do with transportation of goods than with consumption of camelid meat (*see* Chapter 2 for a discussion of the ethnohistoric evidence for camelid presence and use in Chincha).

Work by Joyce Marcus (1987*a*, 1987*b*) in a nearby, Late Intermediate Period fishing site at Cerro Azul, Cañete, provides a useful comparison to the Lo Demás data. On excavating a large compound, Marcus found a room with llama dung covering the floor. Other rooms had contained large quantities of dried fish, and Marcus believes that the camelids were brought to the site to carry away dried fish as part of an exchange network with other segments of the Cañete valley and perhaps even with more distant groups. The fact that llama dung at Lo Demás was found in association with a rectangular compound similar to that excavated in Cerro Azul suggests a similar interpretation (*see* Chapters 11 and 12).

The Sector IV sample of animal coprolites presents one final problem, the presence of what appear to be sheep/goat feces. As mentioned above, sheep/goat and llama dung have a large overlap in size and form; the specimens identified as sheep/goat may actually be llama. Klausner found some specimens that fell squarely into the area of overlap; these are listed as "sheep/goat or llama" on Table 49b. However, there are still many examples which he felt were really sheep or goat. Most of these examples (71.2% of whole specimens, 23.1% of fragments, 67.0% overall in the goat/sheep category) occur between strata 26–1 and 26–3b, the levels identified on the basis of the molluscan and radiocarbon evidence as probably mixed; the lowest occurrence of apparent sheep/goat feces is in stratum 26–8. Sheep and goat were presumably present in Chincha by 1542, when the first Spanish monastery was founded there (*see* Chapter 2). These data support the other indications of mixing in the upper strata of Subunit 26D and the hypothesis that the Sector IV occupation lasted into the early Colonial Period.

Implications of the Faunal Data for Specialization

The faunal data offer several important pieces of information concerning specialization at Lo Demás. First, the overwhelming abundance of marine animals relative to terrestrial ones indicates that the inhabitants of the site had an intimate relationship with the sea, and that they relied on marine resources for the bulk of their meat. The patterning in the fish remains in terms of distribution by species and by skeletal element provides support for the notion that fish were processed at the site. However, the data also suggest that fish processing took place only in Sector I, and not in Sector IV. The Sector IV elite residents would have received processed fish for consumption and redistribution. Given the presence of camelid feces in the latter sector, it is likely that the elite residents were exporting some material, probably fish as tribute and for exchange.[108] Finally, the guinea pig remains from Sector I show that a *curandero*—a full- or part-time specialist—was operating at the site at least during the deposition of Complexes B and C.

CHAPTER 10

ORGANIC REMAINS: FLORA

This chapter reviews the data on flora from the excavations in Sectors I and IV of Lo Demás. Asunción Cano E. (Javier Prado Natural History Museum, Lima, Peru) identified the plant remains (Cano E., 1984, 1986*a*, 1986*b*, 1987). Descriptions of the various taxa from Lo Demás can be found in the published literature (Cohen, 1978; MacBride, 1936–1971; Towle, 1961). The sample studied by Cano E. includes the botanical remains retained in the ¼″ screen from the 1983 test excavations (Sector I), from Subunits 3B and 10D (Sector I), and from Subunit 26D (Sector IV), except certain plant parts that were considered as artifacts. These exceptions included the well-preserved gourd (*Lagenaria siceraria*) rind fragments, wooden objects, and cactus spine and wooden needles (*see* Chapter 8). As noted in Chapter 5, not all subunits contained all four stratigraphic complexes; the 1983 excavations lacked Complex B and Subunit 3B lacked Complex D. Subunit 26D was treated as a single stratigraphic complex. A total 12,247 specimens from Sector I[109] and 10,345 specimens from Sector IV were identified to the family, genus, or species level.

Methodology

The identification of the plant remains from Lo Demás involved several steps (Cano E., 1984:1). First, the material from each provenience was separated into like units according to the plant organ. Each of these groups was counted, and the condition of each specimen was noted (whole or fragment, burnt, gnawed, etc.). Next, the family, genus, and species of each group of like units was identified using published descriptions, photographs, and taxonomic keys. Finally, the results were checked against specimens in the Javier Prado Museum Herbarium and a field collection made in the vicinity of Lo Demás by Cano E. (1984, 1986*a*, 1987) on two visits. Each specimen was identified to the lowest possible taxonomic level; those specimens (mostly parts of stems) which could not be identified at least to the family level were not counted in the analysis. These unidentified specimens were saved for future analysis; it may be possible to identify them through microscopic inspection.

Using the identifications made by Cano E., I compiled the different proveniences into summary tables for each stratigraphic complex of Subunits 3B, 10D, and the 1983 test excavation. Subunit 26D was compiled into a single table. Organized by species, plant organ, and whether the specimen is whole or a fragment, these tables provided the database for the tables and analyses presented in the following sections of this chapter.

General Characteristics of the Lo Demás Botanical Remains

Table 50 provides a taxonomic chart of the plant remains identified from Lo Demás. The two best-represented families in terms of number of species are Leguminosae (legumes) and Gramineae (grasses). All of the identified taxa are native to the Peruvian coast except *Cynodon* cf. *dactylon,* an Old World introduction. Only one specimen of this species was recovered; its provenience is near the surface in Stratigraphic Complex D. The possible chronological implications of this specimen are discussed in Chapter 11.

The flora at Lo Demás comes from four major environmental zones: rocky shore, marsh/river bank, valley bottom, and *lomas* (seasonally fog-covered coastal hills) (*see* Table 51). All of these environments except the *lomas* (the least represented in terms of number of species and number of specimens) are found in the vicinity of Lo Demás (*see* Chapters 4 and 5). The valley bottom species can be further subdivided into cultigens grown in prepared fields, field invaders or weeds, and trees (probably cultivated). The greatest number of species and specimens are field cultigens, followed by species from humid, marshy habitats. In Chincha during the Late Horizon, the area between Lo Demás and the shoreline was marsh; the relative abundance of marsh plant specimens in the Lo Demás sample (1,835/22,592 = 8.1% by NISP [Number of Identified Speeimens]) indicates that the fishermen of Chincha had access—probably direct—to the marsh zone, which would have been part of the fishermen's territory alluded to in the "Aviso" (Rostworowski, 1970:170) (*see* Chapter 2).

The potential uses of the plant species from Lo Demás fall into four major categories: food, industrial uses, medicine, and forage plants (Table 52). A review of the ethnobotanic literature indicates

Table 50.—*Taxonomic list of identified plant taxa from archaeological contexts at Lo Demás. Data from Cano E. (1984, 1986a, 1986b, 1987).*

CRYPTOGAMAE
- Chlorophytae
  - Ulvaceae
    - *Ulva* sp. (green algae)
- Rhodophytae
  - Gigartinaceae
    - *Gigartina chamissoi* (C. Ag.) J. Ag. (red algae)
  - Phyllophoraceae
    - *Gymnogongrus* sp. (red algae)

PHANEROGAMAE
- Monocotyledonea
  - Typhaceae
    - *Typha angustifolia* L. (cattail)
  - Gramineae
    - *Phragmites australis* (Cav.) Trin. ex Steud. (reed grass)
    - *Gynerium sagittatum* (Aubl.) Beauv. ("caña brava")
    - *Cynodon* cf. *dactylon* (L.) Pers.
    - *Paspalum* sp.
    - *Cenchrus echinatus* L. (burr)
    - *Zea mays* L. (maize)
  - Cyperaceae
    - *Scirpus* cf. *californicus* (C. A. Mey.) Steud. ("totora")
  - Lemnaceae
    - *Lemna* sp. (duckweed)
  - Bromeliaceae
    - *Tillandsia* sp.
  - Cannaceae
    - *Canna edulis* Ker-Gawl ("achira")
- Dicotyledonea
  - Salicaceae
    - *Salix* sp. (willow)
  - Leguminosae
    - *Inga feuillei* D. C. ("pacay")
    - *Caesalpina spinosa* (Mol.) Kuntze
    - *Pachyrrhizus* sp. ("jicama")
    - *Phaseolus lunatus* L. (lima bean)
    - *Phaseolus vulgaris* L. (common bean)
    - *Canavalia plagiosperma* Piper (jack bean)
    - *Arachis hypogaea* L. (peanut)
    - *Crotalaria incana* L.
  - Erythroxylaceae
    - *Erythroxylum* sp. (coca)
  - Malpighiaceae
    - *Bunchosia armeniaca* (Cav.) Rich. (monk's plum)
  - Malvaceae
    - *Gossypium barbadense* L. (cotton)
  - Myrtaceae
    - *Psidium guajaba* L. (guava)
  - Boraginaceae
    - *Heliotropium* sp.
  - Convolvulaceae
    - *Ipomoea batatas* (L.) Poir (sweet potato)
    - *Ipomoea* sp.
  - Verbenaceae
    - *Phyla nodiflora* (L.) Greene
  - Sapotaceae
    - *Pouteria lucuma* (R. & P.) O. Kuntze ("lucuma")
  - Solanaceae
    - *Nicandra physaloides* (L.) Gaertn.
    - *Physalis* sp.
    - *Capsicum frutescens* L. (ají pepper)
  - Cucurbitaceae
    - *Cucurbita maxima* Duch. (squash)
    - *Cucurbita pepo* (squash)
    - *Cucurbita* sp.
    - *Lagenaria siceraria* (Mol.) Standl. (gourd)

that only three of the identified taxa have no previously suggested prehistoric uses: *Gymnogongrus* sp. (red algae), *Lemna* sp. (duckweed), and *Nicandra physaloides*. According to Sagástegui (1973), *Nicandra physaloides* is toxic to man and animal, and it may have had some medicinal or shamanic role. *Gymnogongrus* is currently important in the production of agar for culturing bacteria (Acleto, 1971).

Of the plants listed as potential food sources, the predominant kinds of organs recovered from the archaeological contexts tend to accord with food use. Some of the remains are the actual edible portion, but more frequently encountered were elements which come as a "package" with the edible portion. For instance, maize (*Zea mays*) cobs were quite abundant (264 whole, 1,891 fragments), as were lucuma (*Pouteria lucuma*) testa (seed coats from the pits of the fruit) and seeds (24 whole testa, 2,162 testa fragments; 9 whole seeds, 56 seed fragments) and peanut (*Arachis hypogaea*) shells (20 whole, 2,427 fragments).

Roots and tubers present a greater problem, as the edible portion is totally consumable and often is not transported in association with inedible elements. Three of the edible root plants identified in the Lo Demás remains are cultigens (*Canna, Pachyrrhizus,* and *Ipomoea*). Few specimens of these species were found among the botanical remains from Lo Demás. Of the five sweet potato (*Ipomoea batatas, Ipomoea* sp.) elements, four were whole or fragmented tuberous roots, while the seven achira (*Canna edulis*) fragments included one piece of a rhizome. In contrast, the 70 identified jicama (*Pachyrrhizus* sp.) specimens included fruits, pericarp fragments and seeds, but no tubers. It seems clear that sweet potatoes and achira were consumed, though reliable estimates of their dietary importance are not possible. The jicama case is more ambiguous; Towle (1961:51–52) notes that *Pachyrrhizus* seeds are toxic. Rostworowski (1970:170) mentions

Table 51.—*Plant taxa from Lo Demás by habitat. Compiled from Cano E. (1984, 1986a, 1986b, 1987) and Towle (1961).* [a] *According to Cano E. (1984:6),* Salix *grows in humid or swampy ground and along the edge of irrigation canals, but is also planted around the edges of fields as a living fence.* [b] *According to Towle (1961: 4),* Caesalpina spinosa *grows wild along river banks in the lomas zone, but is also planted.*

Rocky Shore	
Ulva sp.	*Gymnogongrus* sp.
Gigartina chamissoi	
Marsh/River Banks	
Scirpus cf. *californicus*	*Lemna* sp.
Gynerium sagittatum	*Typha angustifolia*
Paspalum sp.	*Salix* sp.[a]
Phragmites australis	
Field Cultigens	
Canna edulis	*Arachis hypogaea*
Cynodon cf. *dactylon*	*Canavalia plagiosperma*
Zea mays	*Pachyrhizus* sp.
Ipomoea batatas	*Phaseolus lunatus*
Cucurbita maxima	*Phaseolus vulgaris*
Cucurbita pepo	*Gossypium barbadens*
Lagenaria siceraria	*Capsicum frutescens*
Field Invaders (Weeds)	
Cenchrus echinatus	*Nicandra physaloides*
Heliotropium sp.	*Physalis* sp.
Crotalaria incana	*Phyla nodiflora*
Valley (Trees and Shrubs)	
Inga feuillei	*Salix* sp.[a]
Bunchosia armeniaca	*Pouteria lucuma*
Psidium guajaba	*Erythroxylum* sp.
Lomas	
Tillandsia sp.	*Caesalpina spinosa*[b]

Table 52.—*Plant taxa from Lo Demás by potential use. Compiled from uses cited by Cano E. (1984, 1986a, 1986b, 1987), Morton (1981), and Towle (1961). Species for which the potential use is indicated or strongly supported at Lo Demás are marked with an asterisk. A question mark indicates some doubt concerning the identification of specimens to the indicated taxonomic level.*

Food

Algae: *Ulva* sp.*, *Gigartina chamissoi**
Grains: *Zea mays**
Legumes: *Arachis hypogaea**, *Canavalia plagiosperma**, *Inga feuillei**, *Phaseolus lunatus**, *Phaseolus vulgaris**
Condiments: *Capsicum frutescens**
Beverages: *Zea mays*
Fruits: *Cucurbita maxima**, *Cucurbita pepo**, *Lagenaria siceraria**, *Bunchosia armeniaca**, *Psidium guajaba**, *Pouteria lucuma**, *Physalis* sp.*
Roots and tubers: *Canna edulis**, *Ipomoea batatas**, *Pachyrhizus* sp., *Scirpus* cf. *californicus*, *Typha angustifolia**

Industrial

Dyes and tannins: *Caesalpina spinosa*
Fruits for utensils: *Lagenaria siceraria**
Fibers and stems: *Tillandsia* sp., *Canna edulis*, *Scirpus* cf. *californicus**, *Gynerium sagittatum**, *Phragmites australis**, *Zea mays*, *Typha angustifolia**, *Gossypium barbadense**
Woods: *Gynerium sagittatum**, *Inga feuillei*, *Salix* sp.
Living fence: *Salix* sp.
Reed rafts: *Scirpus* cf. *californicus*?, *Typha angustifolia*?

Medicine	
Canna edulis	*Crotalaria incana*
Cynodon cf. *dactylon*	*Pachyrhizus* sp.
Tillandsia sp.	*Caesalpina spinosa*
Gynerium sagittatum	*Gossypium barbadense*
Paspalum sp.	*Psidium guajaba*
Zea mays	*Salix* sp.
Heliotropium sp.	*Pouteria lucuma*
Ipomoea batatas	*Capsicum frutescens*
Cucurbita maxima	*Physalis* sp.
Lagenaria siceraria	*Phyla nodiflora*
Erythroxylum sp.	
Forage	
Cynodon cf. *dactylon*	*Paspalum* sp.

"the planting of ... seeds and roots" by the valley's farmers.

The two other plants with edible tubers are the marsh reeds *Typha angustifolia* and *Scirpus* cf. *californicus*. The remains of both species are dominated by aerial elements, mainly stems and leaves. However, three rhizome fragments of *Typha angustifolia* were included in the botanical sample from Lo Demás. Although one or both of these plants were probably consumed at the site, their more important use was as a source of construction material for matting (pieces of reed mats were encountered in the deposits—*see* Chapter 6) and perhaps for reed rafts (the "Aviso" says that each fisherman went to sea on a raft [Rostworowski, 1970:170]). The large number of stem fragments of these species found in the archaeological deposits supports this interpretation.

Of the other industrial plants, there is clear evidence for use of cotton (*Gossypium barbadense*) for nets and thread (*see* Chapter 8). Canes of either *Gynerium* or *Phragmites* were found in situ in channels in Sector I, where they formed part of a *quincha* structure in Stratigraphic Complex D (*see* Chapter 6). Fragments of gourd rind (pericarp) (*Lagenaria siceraria*) were found throughout the deposit, many with cut edges and several with pyroengraved designs (*see* Chapter 8), attesting to the use of gourds as containers or utensils. Later in this chapter, I discuss in detail the evidence for gourd utensil pro-

Table 53.—*Number of identified plant specimens (NISP), percent, and rank by taxon and stratigraphic complex from 1983 test excavations, Sector I. Complex A is not included* (see *note 109*). *A question mark indicates some doubt concerning the identification of specimens to the indicated taxonomic level.*

Species	Complex C			Complex D		
	NISP	%	Rank	NISP	%	Rank
Ulva sp.	—	—	—	1	—	35
Gigartina chamissoi	6	0.3	23	29	0.6	15
Gymnogongrus sp.	26	1.3	12	1	—	35
Typha angustifolia	—	—	—	227	5.1	4
Typha sp.	4	0.2	27	—	—	—
Typha?	8	0.4	18	3	0.1	30
Liliaceae or Amarylladaceae?	7	0.4	20	—	—	—
Gramineae	120	6.0	6	114	2.5	7
Phragmites australis	8	0.4	18	—	—	—
Phragmites sp.	6	0.3	23	27	0.6	18
Phragmites?	13	0.7	17	16	0.4	25
Gynerium or *Phragmites*	4	0.2	27	27	0.6	18
Gynerium sagittatum	16	0.8	15	—	—	—
Cynodon dactylon	—	—	—	1	—	35
Paspalum sp.	—	—	—	1	—	35
Cenchrus echinatus	145	7.3	4	124	2.8	6
Zea mays	619	31.1	1	2,025	45.3	1
Cyperaceae?	90	4.5	8	81	1.8	8
Scirpus cf. *californicus*	7	0.4	20	57	1.3	12
Scirpus?	—	—	—	28	0.6	17
Tillandsia sp.	7	0.4	20	10	0.2	27
Canna edulis?	1	0.1	29	—	—	—
Amaranthaceae?	—	—	—	7	0.2	28
Cactaceae?	—	—	—	1	—	35
Salix sp.	1	0.1	29	2	—	32
Leguminosae	12	0.6	18	24	0.5	21
Inga feuillei	5	0.3	25	2	—	32
Inga?	—	—	—	1	—	35
Caesalpina spinosa?	5	0.3	25	—	—	—
Pachyrhizus sp.	—	—	—	66	1.5	11
Phaseolus lunatus	19	1.0	14	46	1.0	13
Phaseolus vulgaris	31	1.6	11	21	0.5	23
Phaseolus sp.	—	—	—	21	0.5	23
Phaseolus?	1	0.1	29	22	0.5	22
Canavalia plagiosperma	—	—	—	39	0.9	14
Canavalia?	—	—	—	1	—	35
Arachis hypogaea	188	9.5	3	168	3.8	5
Crotalaria incana	33	1.7	10	2	—	32
Bunchosia armeniaca	1	0.1	29	—	—	—
Gossypium barbadense	109	5.5	7	451	10.1	3
Ipomoea batatas	—	—	—	1	—	35
Ipomoea sp.	—	—	—	1	—	35
Verbenaceae?	—	—	—	1	—	35
Pouteria lucuma	258	13.0	2	598	13.4	2
Capsicum frutescens	127	6.4	5	29	0.6	15
Capsicum?	1	0.1	29	3	0.1	30
Cucurbitaceae?	—	—	—	7	0.2	28
Cucurbita sp.	73	3.7	9	67	1.5	10
Cucurbita?	14	0.7	16	81	1.8	8
Lagenaria siceraria	23	1.2	13	26	0.6	20
Lagenaria?	1	0.1	29	15	0.3	26
Total	1,989			4,473		

Table 54.—*Number of identified plant specimens (NISP), percent, and rank by taxon and stratigraphic complex from Subunit 3B, Sector I. Complex A is not included* (see *note 109). A question mark indicates some doubt concerning the identification of specimens to the indicated taxonomic level.*

Species	Complex B			Complex C		
	NISP	%	Rank	NISP	%	Rank
Gigartina chamissoi	—	—	—	5	0.2	19
Gymnogongrus?	—	—	—	10	0.4	16
Typha sp.	15	1.7	13	3	0.1	21
Gramineae	—	—	—	116	5.2	6
Phragmites australis	27	3.1	9	40	1.8	12
Gynerium sagittatum	—	—	—	24	1.1	15
Paspalum sp.	—	—	—	2	0.1	25
Cenchrus echinatus	58	6.6	6	60	2.7	10
Zea mays	257	29.4	1	530	23.8	1
Cyperaceae	—	—	—	4	0.2	20
Scirpus cf. *californicus*	69	7.9	5	152	6.8	5
Scirpus sp.	14	1.6	14	363	16.3	2
Tillandsia sp.	—	—	—	1	—	28
Canna sp.	—	—	—	6	0.3	18
Leguminosae	—	—	—	38	1.7	13
Inga feuillei	4	0.5	15	3	0.1	21
Pachyrhizus sp.	2	0.2	16	2	0.1	25
Phaseolus lunatus	1	0.1	17	8	0.4	17
Phaseolus vulgaris	16	1.8	11	66	3.0	9
Phaseolus sp.	—	—	—	1	—	28
Canavalia sp.	16	1.8	11	—	—	—
Canavalia?	—	—	—	1	—	28
Arachis hypogaea	109	12.5	2	79	3.5	8
Crotalaria sp.	—	—	—	3	0.1	21
Bunchosia armeniaca	1	0.1	17	1	—	28
Gossypium barbadense	38	4.3	7	115	5.2	7
Heliotropium sp.	1	0.1	17	2	0.1	25
Pouteria lucuma	72	8.2	4	267	12.0	3
Nicandra physaloides	—	—	—	3	0.1	21
Physalis sp.	1	0.1	17	—	—	—
Capsicum frutescens	38	4.3	7	31	1.4	14
Cucurbita maxima	—	—	—	1	—	28
Cucurbita sp.	109	12.5	2	239	10.7	4
Lagenaria siceraria	25	2.9	10	50	2.2	11
Total	874			2,226		

duction in Sector IV. Several large wooden artifacts are described in Chapter 8, as are wood and cactus spine needles; these artifacts were not enumerated in the botanical samples because they could not be securely identified. There is no direct evidence for the other industrial uses listed in Table 52.

The distribution of potential medicinal species between Sectors I and IV at Lo Demás suggests localization of activities carried out at the site. Only 12 of the 21 species for which medicinal use is known are present in Sector IV, while 19 are present in Sector I (cf. Table 52 with Tables 53–56).[110] However, one of the medicinal species found in Sector I (*Cynodon* cf. *dactylon*) is a postconquest introduction in the Andes and may be intrusive at Lo Demás. Although sample size effect probably accounts for some of the difference between sectors,[111] the condition of the guinea pig remains in Sector I (*see* Chapter 9) suggests that the difference is due to the operation of a *curandero* in Sector I. In this context, it is interesting to note that the stomach contents of one of the burials in Sector II, an adult between 20 and 25 years of age (G. Elera N., personal communication, 1984), contained a large quantity of *Capsicum* seeds and Dicotyledoneae fibers from masticated twigs (Jones, 1986). Three quarters of the medicinal plants from Lo Demás are dicots, including the three taxa known only for me-

Table 55.—*Number of identified plant specimens (NISP), percent, and rank by taxon and stratigraphic complex from Subunit 10D, Sector I. Complex A is not included (see note 109). A question mark indicates some doubt concerning the identification of specimens to the indicated taxonomic level.*

Species	Complex B			Complex C			Complex D		
	NISP	%	Rank	NISP	%	Rank	NISP	%	Rank
Ulva sp.	—	—	—	—	—	—	6	1.1	12
Gigartina chamissoi	—	—	—	4	0.6	13	6	1.1	12
Gymnogongrus?	—	—	—	—	—	—	15	2.8	10
Gramineae	90	6.1	4	10	1.5	10	2	0.4	16
Phragmites australis	13	0.9	10	13	1.9	9	1	0.2	20
Phragmites sp.	4	0.3	14	3	0.4	14	37	7.0	6
Gynerium sagittatum	3	0.2	15	2	0.3	15	3	0.6	15
Cenchrus echinatus	50	3.4	5	6	0.9	12	2	0.4	16
Zea mays	441	29.9	2	148	21.7	2	83	15.7	2
Scirpus cf. *californicus*	—	—	—	1	0.1	16	50	9.5	4
Scirpus?	—	—	—	1	0.1	16	—	—	—
Lemna sp.	—	—	—	40	5.9	5	25	4.7	8
Tillandsia sp.	—	—	—	—	—	—	2	0.4	16
Leguminosae	15	1.0	9	—	—	—	—	—	—
Inga feuillei	43	2.9	6	111	16.3	4	103	19.5	1
Phaseolus lunatus?	1	0.1	18	—	—	—	—	—	—
Phaseolus vulgaris	—	—	—	—	—	—	25	4.7	8
Canavalia?	2	0.1	17	—	—	—	—	—	—
Arachis hypogaea	591	40.1	1	125	18.3	3	43	8.1	5
Crotalaria sp.	6	0.4	12	—	—	—	2	0.4	16
Bunchosia armeniaca	1	0.1	18	—	—	—	—	—	—
Gossypium barbadense	28	1.9	8	14	2.1	8	10	1.9	11
Psidium guajaba?	1	0.1	18	—	—	—	—	—	—
Labiatae	10	0.7	11	—	—	—	—	—	—
Pouteria lucuma	131	8.9	3	156	22.9	1	71	13.4	3
Capsicum frutescens	5	0.3	13	—	—	—	—	—	—
Cucurbita sp.	36	2.4	7	19	2.8	7	—	—	—
Cucurbita?	—	—	—	21	3.1	6	37	7.0	6
Lagenaria siceraria	3	0.2	15	8	1.2	11	5	0.9	14
Compositae	1	0.1	18	—	—	—	—	—	—
Total	1,475			682			528		

dicinal use. Analysis of pollen from the Burial II stomach contents found only 19 pollen grains: two were *Tillandsia* sp. (a plant with medicinal uses recovered archaeologically in Sectors I and IV), ten were *Haageocereus* sp. (a columnar cactus), and the rest could not be identified at the genus level (Jones, 1986).

The two species listed under the category of forage are very poorly represented in the botanical sample from Lo Demás (only four specimens), and one of the species (*Cynodon* cf. *dactylon*)—represented by a single specimen—is a possibly intrusive Old World plant. However, the guinea pigs kept at the site could have eaten parts of other plants found in the sample, particularly the maize leaves and stalks. These maize by-products are still used to feed guinea pigs in Peru (Bolton and Calvin, 1981:281–283). A planned study of phytoliths and other botanical elements from Lo Demás guinea pig feces will help determine which of the plant remains at the site contributed to the rodents' diet.

Quantitative Analysis

Limitations

Quantitative analysis of the Lo Demás plant remains presents two kinds of limitations: those inherent in archaeobotanical studies in general, even in an environment as apparently ideal as the desert coast of Peru (*see* Cohen, 1972–1974), and those resulting from the nature of the Lo Demás sample.

Cohen (1972–1974) points out several problems. Both differential use and differential preservation of plant parts can bias the archaeological record. If only

Table 56.—*Number of identified plant specimens (NISP), percent, and rank by taxon from Subunit 26D, Sector IV. A question mark indicates some doubt concerning the identification of specimens to the indicated taxonomic level.*

Species	NISP	%	Rank
Gigartina chamissoi	481	4.6	7
Gymnogongrus?	14	0.1	26
Typha sp.	7	—	27
Gramineae	55	0.5	17
Phragmites australis	87	0.8	14
Phragmites sp.	1	—	33
Gynerium or *Phragmites*	5	—	29
Gynerium sagittatum	187	1.8	11
Cenchrus echinatus	347	3.4	9
Zea mays	1,834	17.7	2
Cyperaceae	45	0.4	21
Scirpus cf. *californicus*	17	0.2	22
Scirpus sp.	92	0.9	13
Lemna sp.	70	0.7	15
Tillandsia sp.	51	0.5	19
Leguminosae	107	1.0	12
Inga feuillei	57	0.6	16
Phaseohis hunatus	6	—	28
Phaseolus vulgaris	49	0.5	20
Phaseolus sp.	53	0.5	18
Canavalia sp.	5	—	29
Arachis hypogaea	1,041	10.1	4
Crotalaria sp.	1	—	33
Erythroxylum sp.	16	0.2	23
Bunchosia armeniaca	16	0.2	23
Gossypium barbadense	2,180	21.1	1
Psidium guajaba	1	—	33
Ipomoea batatas	3	—	31
Phyla nodiflora	2	—	32
Pouteria lucuma	673	6.5	6
Capsicum frutescens	452	4.4	8
Capsicum sp.	210	2.0	10
Cucurbita pepo	16	0.2	23
Cucurbita sp.	985	9.5	5
Lagenaria siceraria	1,179	11.4	3
Total	10,345		

the edible portions of certain plants are brought to a given location, few remains from those species will be found in the archaeological deposits relative to the actual numbers consumed. The tubers discussed above are a case in point. Similarly, if only easily decayed parts of particular species are brought to a site, those species will not be present or will be underrepresented in the record. Therefore, there is a bias towards recovery of plant taxa which have a utilized portion that is itself, or is generally associated with, a decay-resistant plant organ.

A second set of problems raised by Cohen (1972–1974) involves the nature of plant taxonomy. First, most plants are differentiated taxonomically by their flowering parts, but these parts are rarely the economically useful organs and even more rarely are they preserved. Second, botanists tend to concentrate on plants of current economic importance; thus, many species utilized prehistorically are poorly known. These two conditions probably result in biases in terms of the identified portion of preserved plant remains—"wild plants and ones of little contemporary importance . . . will almost always be underrepresented in the *identified* refuse" (Cohen, 1972–1984:55). However, the Lo Demás plant identifications are based on a local (Chincha valley) type collection and the extensive Peruvian herbarium at the Javier Prado Natural History Museum, mitigating the potential identification bias.

Finally, Cohen (1972–1974:52) notes an empirical problem arising from his studies of plant remains from the central coast of Peru. Although the same *range* of taxa is found in sites of differing age, there appears to be a significant difference in the overall *quantity* of preserved specimens between the Late Horizon and all previous periods, with plant remains much more abundant in the Late Horizon. Cohen does not see important environmental differences between the sites in his sample, and he considers the abruptness of the change (from the Late Intermediate Period to the Late Horizon) too fast to be accounted for by differential decay along a temporal continuum. Cohen concludes that only cultural factors can explain this phenomenon, though he does not suggest what these factors might be. However, because Lo Demás is a Late Horizon site, the decrease in recovered remains noted for earlier sites does not apply.

While the problems raised by Cohen are important, they do not affect seriously the kinds of analyses undertaken in this chapter. Cohen's principal concern, quantitative reconstruction of vegetable diet, is not attempted here. The general discussion of the Lo Demás plant remains in the preceding section dealt primarily with presence/absence rather than quantitative criteria. The analyses presented in the following sections are concerned mainly with variation in the relative frequencies of identified specimens from Lo Demás. Systematically absent, decayed, or unidentified taxa are therefore of little importance. I have made several assumptions, however. Because the occupation of the excavated component of Lo Demás was quite short and falls wholly within the Late Horizon, I assume that differential decay between stratigraphic complexes has not biased the sample. From this assumption, and given

Table 57.—*Total number of identified plant specimens (NISP), percent, and rank by taxon (genus or species) and stratigraphic complex for Sector I of Lo Demás. Complex A is not included (*see *note 109). Complex B combines Subunits 3B and 10D. Complex C combines Subunits 3B and 10D with all four 1983 subunits. Complex D combines Subunit 10D with the 1983 subunits. Percentages are calculated on the total number of identified specimens for each stratigraphic complex (*see *Tables 53–55). Only those species with an overall frequency of greater than 2% are included in this table (cf. Tables 53–55). Material not securely identified at least to genus level is not included.*

Species	Complex B			Complex C			Complex D		
	NISP	%	Rank	NISP	%	Rank	NISP	%	Rank
Typha angustifolia	—	—	—	—	—	—	227	4.5	4
Cenchrus echinatus	108	4.6	5	211	4.3	7	126	2.5	6
Zea mays	690	29.7	2	1,297	26.5	1	2,108	42.2	1
Scirpus cf. *californicus*	69	2.9	6	160	3.3	8	107	2.1	7
Scirpus sp.	—	—	—	363	7.4	4	—	—	—
Inga feuillei	47	2.0	8	119	2.4	10	105	2.1	8
Phaseolus vulgaris	—	—	—	97	2.0	11	—	—	—
Arachis hypogaea	700	29.8	1	392	8.0	3	211	4.2	5
Gossypium barbadense	66	2.8	7	238	4.9	6	461	9.2	3
Pouteria lucuma	203	8.6	3	681	13.9	2	669	13.4	2
Capsicum frutescens	—	—	—	158	3.2	9	—	—	—
Cucurbita sp.	145	6.2	4	331	6.8	5	—	—	—
Total this table	2,028	86.3		4,047	82.6		4,014	80.3	
Complex total	2,349			4,897			5,001		

the standardized recovery procedure (¼″ screen), it follows that observed variations in the number and kind of identified specimens per taxon should represent real differences in activities carried out at the loci of excavation.

However, there is one further limitation of the data: the size and distribution of the sample of identified plant specimens from Lo Demás. Almost as many specimens were identified from Sector IV (10,345)[112] as from Sector I (12,247), but the volume of the studied deposits is much greater in Sector I (*see* note 111). Beeause Sector I and Sector IV are eontemporaneous, this difference in density should represent a difference in the kind or intensity of aetivities carried out at the two excavation areas. However, it is likely that the proximity of each sample to the foci of activities and perhaps post-depositional history also account for some of the differences in density of remains. Thus, the two samples may not be equally representative of their respective sectors. Tables 53–55 indicate the number of identified plant specimens (whole plus fragments) by stratigraphic complex for the 1983 excavations (pooled), Subunit 3B, and Subunit 10D in Sector I. Table 56 provides the same data for Subunit 26D in Sector IV. The subunit samples of the Sector I plant remains show some variation in composition by complex. Although it is unclear to what degree these variations reflect different activity loci and to what degree they represent random variation, comparison of the frequencies of common taxa between different members of the same complex in Sector I shows broad agreement and provides a basis for careful interpretation.

Analysis by Stratigraphic Complex in Sector I

For this analysis, the different members of each stratigraphic complex in Sector I have been pooled into complex totals to see changes through time in the importance of predominant plant taxa (Table 57) and organs (Table 58).

Table 57 shows an increase in maize (*Zea mays*) following Complex C and a decrease in peanut (*Arachis hypogaea*) following Complex B. In Complex C, these changes are associated with increased leaf specimens (maize leaves dominate this category) and decreased pericarp specimens (*Arachis* pericarps—peanut shells—predominate in this category) (Table 58). The increase in testa following Complex B is also to be expected; it parallels the general increase in lucuma (*Pouteria lucuma*) specimens, which dominate the testa category. Less predictable from the distribution by species is the increase in stem fragments in Complex C as compared with either the preceding or succeeding complexes.

The differences between Complex B and the succeeding complexes may result in part from different modes of deposition; Complex B consists of refuse thrown outside the living areas to the west of the Sector I excavations, while Complexes C and D are

Table 58.—*Total number of identified plant specimens (NISP), percent, and rank by plant organ and stratigraphic complex for Sector 1 of Lo Demás. Complex A is not included (*see *note 109). Complex B combines Subunits 3B and 10D. Complex C combines Subunits 3B and 10D with all four 1983 subunits. Complex D combines Subunit 10D with the 1983 subunits. Percentages are calculated on the total number of identified specimens for each stratigraphic complex (*see *Tables 53–55). Only those organs with an overall frequency of greater than 2% are included in this table (cf. Tables 53–55). All material identified to family level is included.*

Organ	Complex B			Complex C			Complex D		
	NISP	%	Rank	NISP	%	Rank	NISP	%	Rank
stem	341	14.5	2	1,262	25.8	1	661	13.2	5
cane	—	—	—	122	2.5	8	—	—	—
leaf	57	2.4	6	392	8.0	6	1,064	21.3	1
fruit	136	5.8	5	377	7.7	7	479	9.6	8
pericarp	765	32.5	1	607	12.4	3	356	7.1	7
seed	259	11.0	3	573	11.7	4	612	12.2	6
testa	204	8.7	4	827	16.9	2	790	15.8	2
cob	494	21.0	2	424	8.7	5	707	14.1	3
seed coat	—	—	—	121	2.5	8	—	—	—
Total this table	2,256	96.0		4,705	96.1		4,669	93.4	
Complex total	2,349			4,897			5,001		

midden deposits in direct association with a sequence of floors (*see* Chapter 5). However, Complex B does not differ from the other complexes in all categories. The proportion of maize stays constant from Complex B to Complex C and only changes in Complex D. The proportions of stem fragments in Complexes B and D are nearly the same; only Complex C differs. These patterns suggest that Complex B can be compared with the other two complexes.

The differences between complexes suggest several interpretations concerning changes in activities through time in Sector I. The shift from peanut to maize as the major food species represented by the plant sample may indicate a change in the pattern of plant food acquisition by the inhabitants of Sector I. The increase in maize specimens may be related to a greater degree of interaction with other groups in Chincha. Although maize specimens do not increase in absolute frequency until Complex D, they triple in relation to peanut fragments from Complex B to Complex C (Table 57) (maize specimens are ten times more frequent than peanut specimens in Complex D), placing the beginning of the peanut/maize shift at the same time as the increase in stem fragments. Almost 50% of the stem fragments from Complex C are from members of the Cyperaceae family, which is the taxon used to make reed boats and rafts. Complex C may witness an increase in fishing by the inhabitants of Sector I of Lo Demás, with a concomitant increase in acquisition of goods (maize) exchanged for fish with local farmers and other specialists. This suggestion is discussed further in Chapter 12 in the context of other classes of data.

Analysis by Sector

For analysis by sector, the total of identified plant specimens from Complexes B to D in Sector I was compared with the Sector IV total. Comparisons between Sector IV and individual complexes from Sector I were not attempted because Subunit 26D probably spans all three complexes but cannot be securely subdivided into equivalent units.

The variations in frequency of identified plant specimens both by species and by organ are large enough to suggest real differences between the areas. In terms of species (Table 59), the most striking contrast is in the relative importance of cotton (*Gossypium barbadense*), which predominates in Sector IV, and maize (*Zea mays*), which predominates in Sector I. This contrast is associated with a major difference in the importance of seeds among the recovered plant organs (Table 60); seeds and seed fragments accounted for nearly half of the identified specimens in Sector IV, over three times as frequent as in Sector I. In Sector IV, the seed category was dominated primarily by cotton and secondarily by gourd (*Lagenaria siceraria*) and squash (*Cucurbita* sp.), while in Sector I, cotton and squash seed specimens were about equal and gourd remains of any kind were scarce. This fact highlights the second major contrast between the samples from Sectors I and IV: the importance of gourd specimens (*Lag-*

Table 59.—*Total number of identified plant specimens (NISP), percent, and rank by taxon and sector of Lo Demás. For Sector I, Complex A is not included* (see *note 109). Percentages are calculated on the total number of identified specimens in Complexes B–D in Sector I and for the Subunit 26D total for Sector IV* (see *Tables 53–56). Only those species with an overall frequency of greater than 2% are included in this table (cf. Tables 53–56). Material not securely identified at least to genus level is not included.*

Species	Sector I			Sector IV		
	NISP	%	Rank	NISP	%	Rank
Gigartina chamissoi	—	—	—	481	4.6	7
Cenchrus echinatus	445	3.6	6	347	3.4	9
Zea mays	4,095	33.4	1	1,834	17.7	2
Scirpus cf. *californicus*	336	2.7	8	—	—	—
Scirpus sp.	377	3.1	7	—	—	—
Inga feuillei	271	2.2	0	—	—	—
Arachis hypogaea	1,303	10.6	3	1,041	10.1	4
Gossypium barbadense	765	6.2	4	2,180	21.1	1
Pouteria lucuma	1,553	12.7	2	673	6.5	6
Capsicum frutescens	—	—	—	452	4.4	8
Capsicum sp.	—	—	—	210	2.0	10
Cucurbita sp.	543	4.4	5	985	9.5	5
Lagenaria siceraria	—	—	—	1,179	11.4	3
Total this table	9,688	79.1		9,382	90.7	
Sector total	12,247			10,345		

enaria siceraria) in Sector IV and their minimal recovery from Sector I.

The third important difference between sectors is the presence of coca (*Erythroxylum* sp.) in Sector IV and its absence in Sector I. As today, coca was used in pre-Hispanic times as a medicinal plant and "as a mild stimulant and as sustenance for working under harsh environmental conditions" (Plowman, 1986:5). It was also important "for offerings, ceremonies to the *huacas,* curing rituals, and divination" (Rostworowski, 1988*b*:64). Murra (1986) has recently argued that access to coca in the Andean world was not restricted to elites, but instead available to all. However, the Inka reorganized coca production throughout much of their empire (Netherly, 1988*b*), and it is likely that access to coca came under greater control in the Late Horizon. In any case, the distribution of coca remains at Lo Demás argues for differential access to this plant.

The last notable difference between the two sectors is the abundance (nearly 5%) of algal thalli (mostly *Gigartina chamissoi*) in the Sector IV sample and the virtual absence of algae in the Sector I sample. Algae may have been used to pack fish or

Table 60.—*Total number of identified plant specimens (NISP), percent, and rank by plant organ and sector of Lo Demás. For Sector I, Complex A is not included* (see *note 109). Percentages are calculated on the total number of identified specimens in Complexes B–D in Sector I and for the Subunit 26D total for Sector IV* (see *Tables 53–56). Only those organs with an overall frequency of greater than 2% are included in this table (cf. Tables 53–56). All material identified at least to family level is included.*

Organ	Sector I			Sector IV		
	NISP	%	Rank	NISP	%	Rank
thallus	—	—	—	495	4.8	7
stem	1,669	13.6	3	1,056	10.2	3
leaf	1,513	12.4	5	393	3.8	8
fruit	992	8.1	7	771	7.5	4
pericarp	1,728	14.1	2	1,120	10.8	2
seed	1,444	11.8	6	4,702	45.5	1
testa	1,821	14.9	1	645	6.2	5
cob	1,625	13.3	4	505	4.9	6
Total this table	10,792	88.1		9,687	93.6	
Sector total	12,247			10,345		

shellfish for transportation, or may itself have been a trade or tribute item, as it has been since the Spanish conquest (Masuda, 1981, 1982).

Subunit 26D, the source of the Sector IV sample, lies next to Building IV–2, a large, rectangular enclosure, and consists mainly of refuse thrown out of that building (*see* Chapter 5). The remains from 26D should therefore relate to activities carried out in the enclosure. The predominance of an industrial plant (cotton) in Subunit 26D suggests that productive activities involving fiber processing were more important in Building IV–2 than in the residential area in Sector I. Building IV–2 at Lo Demás is built of the large, rectangular *adobes* associated with Inka-related structures in Chincha (*see* Chapters 4 and 6); Craig Morris (1985) found evidence of textile manufacture in the Inka precinct at nearby La Centinela.

Cotton was certainly important in Sector I, as well; the presence of seeds, fiber, and other *Gossypium* organs in the Sector I sample together with net fragments, a net making tool, a wooden weaving tool, spinning equipment, needles, threads, and patched pieces of cotton cloth (*see* Chapter 8) indicate that cotton thread was spun, employed in net manufacture and repair, and used for patching torn and worn out cloth. Indeed, the only direct evidence for the use of the cotton in Sector IV consisted of nine needle fragments, three spindle fragments, four whole or broken spindle whorls, a bone weaving tool, and a possible bone *mallero,* all from Subunit 26D (*see* Chapter 8). Nevertheless, the great abundance of cotton remains in Sector IV attests to the importance of fiber processing in that sector.

The importance of gourd in Sector IV is also related to productive activities taking place in Building IV–2. The *Lagenaria siceraria* specimens from the Subunit 26D *botanical* sample consist entirely of seeds and seed fragments (1,179 specimens—*see* Table 56). As artifacts, the well-preserved gourd pericarp (rind) fragments from the Lo Demás excavations were treated separately from the botanical sample (*see* Chapter 8). In Subunit 26D, 255 such fragments were recovered, including six rim sherds, 17 other examples with cut marks, six pieces with incised or pyroengraved decoration, and 33 peduncles (13% of total gourd rind fragments; *see* Chapter 8, Table 13). Peduncles are the point where the stem connects to the gourd. Peduncles and seeds are removed in preparing gourds for use as utensils. Far fewer pericarp fragments were found in Sector I—for instance, only 59 were recovered from Subunit 10D—and peduncles were quite rare (only three—5% of the total—were found; *see* Chapter 8, Table 12). These data strongly suggest that production of gourd utensils was carried out in Building IV–2, but not in the excavated area of Sector I. According to Rostworowski (1970:156–157), gourd containers were one of the local products carried as trade items by the merchants of Chincha, and gourds were found in many of the graves excavated by Uhle (Kroeber and Strong, 1924:36–37; Whitaker, 1948:54–55).

In accordance with ethnohistoric data for the coast (*see* Chapter 2), the group of monumental structures in Sector IV would have housed a Chincha local level lord, probably a lord of fishermen. Among the structures in this precinct, Building IV–2 and the activities it housed must have had a high status, given both the original size of the structure and the use of Inka-related rectangular *adobes.* Considering the abundance of industrial plant specimens in the Sector IV botanical sample, Building IV–2 may have housed artisans attached to the lord. Such a situation is known from ethnohistoric documents for the north coast (Hart, 1983:254–255; also Rostworowski, 1977, 1981; Netherly, 1977; Ramirez-Horton, 1982) and is parallelled to a degree in the archaeological evidence for artisan production at Chan Chan, the Late Intermediate Period Chimu capital in the north coast Moche valley (Topic, 1982). Among the ethnohistorically documented obligations of Andean lords, both the provision of food and drink and the presentation of textiles were of extreme importance (Murra, 1980). At the highland Inka administrative center of Huanuco Pampa, Morris and Thompson (1985) found abundant ceramic evidence for the production and consumption of chicha (maize beer) and food associated with the high status sector of the site. On the coast, gourds may well have replaced the ceramic serving vessels used in the highlands. It is therefore possible that the gourd utensils and cotton products manufactured in Building IV–2 were for the use of the local lord presiding over Sector IV of Lo Demás, and not for trade by the merchants. This topic is discussed further in Chapters 11 and 12. In either case, the gourd remains provide clear evidence of attached specialists producing goods other than fish for a fishing lord.

Implications of the Botanical Data for Specialization

The botanical sample from the Late Horizon excavations at Lo Demás sheds light on some aspeets of specialization at the site while leaving a number

of ambiguities that must be resolved using other classes of data.

It would seem that some of the artisans mentioned in the "Aviso" (Rostworowski, 1970) were attached to local level lords, including fishing lords. The Sector IV cotton and gourd utensil manufacturers could well have been full- or part-time specialists working for the lord. If this was the case, it challenges the autonomous nature of all of the occupational specialists in Chincha suggested by the ethnohistoric model drawn exclusively from data on Chincha (*see* Chapter 2). However, given the generalized structure of authority and its exercise in the Andes (e.g., Netherly, 1977), it is not surprising that a model applied to the population at large should be warped within the orbit of lords exercising sufficient power to construct the monumental structures in Sector IV of Lo Demás. Indeed, such a case accords well with the general coastal ethnohistoric model drawn from the more detailed north coast record (*see* Chapter 2).

In Sector I, the residential area of common fishermen, the plant remains raise more questions than they answer. A large part of the identified remains pertain to wild species from the shoreline and from the marsh/backbeach habitat that used to lie between Lo Demás and the shoreline (*see* Chapter 5). Among these species, the most common are the various marsh reeds and canes, including the totora species necessary for making reed rafts. Traditional Andean fishermen today encourage stands of these plants in natural or man-made sunken gardens near the shore, and there is archaeological evidence that this pattern extends into the pre-Hispanic periods (e.g., Kautz and Keatinge, 1977; *see also* Chapter 12). Moseley (personal communication, 1985) has suggested that the fishermen controlled their essential means of production, including reeds for rafts and cotton for nets.

The key question in evaluating the nature of Chincha specialization, however, is not whether the fishermen controlled stands of wild or semi-domesticated littoral plants, but whether they actively cultivated fully domesticated plants. Unfortunately, it is precisely on this point that the botanical remains are ambiguous. From the documentary evidence, it is clear that each specialized group had access to products of the other groups. Thus, a variety of plants are expected in the fishing site. The plant parts found, however, should only include the utilized parts and those elements that are part of the "package" in which the plants are traded. Many of the plant organs found in Sector I of Lo Demás fit this criterion (e.g., maize kernels and cobs, beans and bean pods, lucuma pits). Where both edible seeds and attached elements are present, the number of the attached elements far exceeds the number of seeds to which they would have been attached (e.g., maize cobs vs. maize kernels). The one exception is cotton, which the fishermen may have grown in order to control their supply of this crucial product.

On the other hand, many of the recovered plant organs are optional parts of potential packages. The primary instance of this situation is the abundance of maize stems and leaves. If stems and leaves formed part of the unit by which maize was transported (Andean farmers usually do transport and store maize with the leaf and stem), then essentially all of the maize remains could have arrived at the site through exchange. Another possibility is that the maize leaves and stems were acquired intentionally as guinea pig fodder. If either of these possibilities obtains, then the plant remains do not contradict the hypothesis that the late pre-Hispanic inhabitants of Lo Demás Sector I were specialized fishermen. Future analyses of the Lo Demás guinea pig coprolites and comparison of the plant remains from contemporary, inland farming sites such as Huacarones will help resolve the remaining ambiguities.

CHAPTER 11

THE ARCHAEOLOGY OF LO DEMÁS

This chapter synthesizes the archaeological information on the Late Horizon fishing site of Lo Demás, in Chincha, Peru. These data come from the excavations in 1983 and 1984 (*see* Chapters 5 and 6) and from subsequent analyses of the recovered artifacts and organic materials (*see* Chapters 7 to 10).

Summary of Site, Layout, Excavations, and Stratigraphy

Lo Demás runs north–south parallel to the shoreline; at the time the site was occupied, most of the land around it was either marsh or a roughly contemporary cemetery. The site is divided into four

sectors: Sector I (to the south) contains Late Horizon common residences, Sectors II and III have late pre-Hispanic burials and buried Paracas 9 (late Early Horizon) structures (*see* Figs. 3 and 4), and Sector IV contains parts of two late pre-Hispanic monumental structures, Buildings IV–1 and IV–2 (*see* Fig. 6).

Excavations were conducted in Sectors I, II, and IV, using natural strata; the Sector II results are not discussed in detail in this study. In Sector I, 22 m^2 were opened. Strata consisted mostly of primary midden deposits and use-trampled floors punctuated by pits and channels filled with refuse from overlying deposits. The strata and features fall into four major stratigraphic units (A to D, from bottom to top), of which B to D contain most of the remains, while A is nearly sterile. These complexes form the units of analysis for the artifacts and organic remains from Sector I. The organic remains (particularly fish and shellfish) show trends which help confirm the validity of the strata groupings, especially the difference between Complex C and Complex D.

In Sector IV, a partially destroyed room (IV–1a) in Building IV–1 was cleared and a 1 m^2 test pit was opened next to Building IV–2. This excavation continued to the base of the major construction episode of Building IV–2 but did not reach sterile soil. The test pit had 17 levels and several sublevels and features.

Limitations on the Data

The nature of the sample constrains the archaeological data from Lo Demás in several ways. First, the absolute size of the sample is small relative to the size of the site (and post-depositional destruction has significantly reduced the original extent of the site). Second, the sample is judgmental rather than random, so that I cannot determine statistically the degree to which the sample represents the site as a whole. Third, limitations on time and money made it necessary to sample the sample of organic remains from the Sector I excavations.

These limitations are mitigated in several ways. First, the entire eastern side of the site presents a continuous, quebrada-cut profile of the archaeological deposit. Visual assessment of this profile indicates that the excavated sample *is* generally representative of the site as a whole. The quebrada profile also allowed me 1) to place the Sector I excavation in the deepest part of the deposit, so that the sample covers the full temporal span of the site; and 2) to place the Sector IV test pit (Subunit 26D) in a location where it intersected refuse deposited directly from Building IV–2, so that the remains are indicative of activities carried out in that building. The quebrada profile also made it possible to determine the sequence and nature of the construction of Building IV–2 and, to a lesser degree, Building IV–1. Second, concerning the analyzed samples of organic remains from Sector I, visual inspection of the unanalyzed material from the rest of the excavation shows it to be quite similar to the excavated sample; furthermore, the analyzed sample from Sector I came from three different parts of the excavation yet showed consistent trends.

Chronology

Radiocarbon dates, pottery, figurines, pyroengraved gourd fragments, spindles and spindle whorls, and architecture provide information on the chronology of Lo Demás. The artifacts which can be assigned dates (discussed below) indicate that the entire occupation of Lo Demás took place during the Late Horizon, beginning at or about the Inka conquest of Chincha (ca. 1479 according to Menzel and Rowe, 1966), and ending shortly after the Spanish conquest in 1532. In other words, the occupation of the site probably spanned 50 to 60 years, from around A.D. 1480 to 1540–1550. Eight radiocarbon dates on charcoal from excavation contexts at Lo Demás support this estimate; discounting one anomalous result (*see* Chapter 5), the uncalibrated dates run from 475 ± 140: A.D. 1475 (BGS 1196) to 350 ± 80: A.D. 1600 (BGS 1191), with an average mean date of A.D. 1535 (*see* Fig. 60 and Table 3). Calibrated according to the curves published by Stuiver and Pearson (1986), the average mean date ranges from A.D. 1471 to A.D. 1486 (the variation results from radiocarbon readings that intersect the calibration curve more than once).

The chronologically diagnostic cultural remains include some which pertain exclusively to the Late Horizon and others which are related to Menzel's (1966) Chincha style, which she dated on the basis of gravelot seriation to the last epoch (8) of the Late Intermediate Period and the beginning of the Late Horizon (before the Inka conquest of Chincha). Late Horizon elements from Sector I include a Cuzco Polychrome A (Rowe, 1944) sherd (Fig. 29c) from the base of Stratigraphic Complex B (the lowest major complex), two plate fragments with a Late Horizon Ica 9 design from Complex B (Fig. 27a, b), an Inka-related painted spindle from Complex B, two sherds with a Late Horizon Ica Inka fish design from

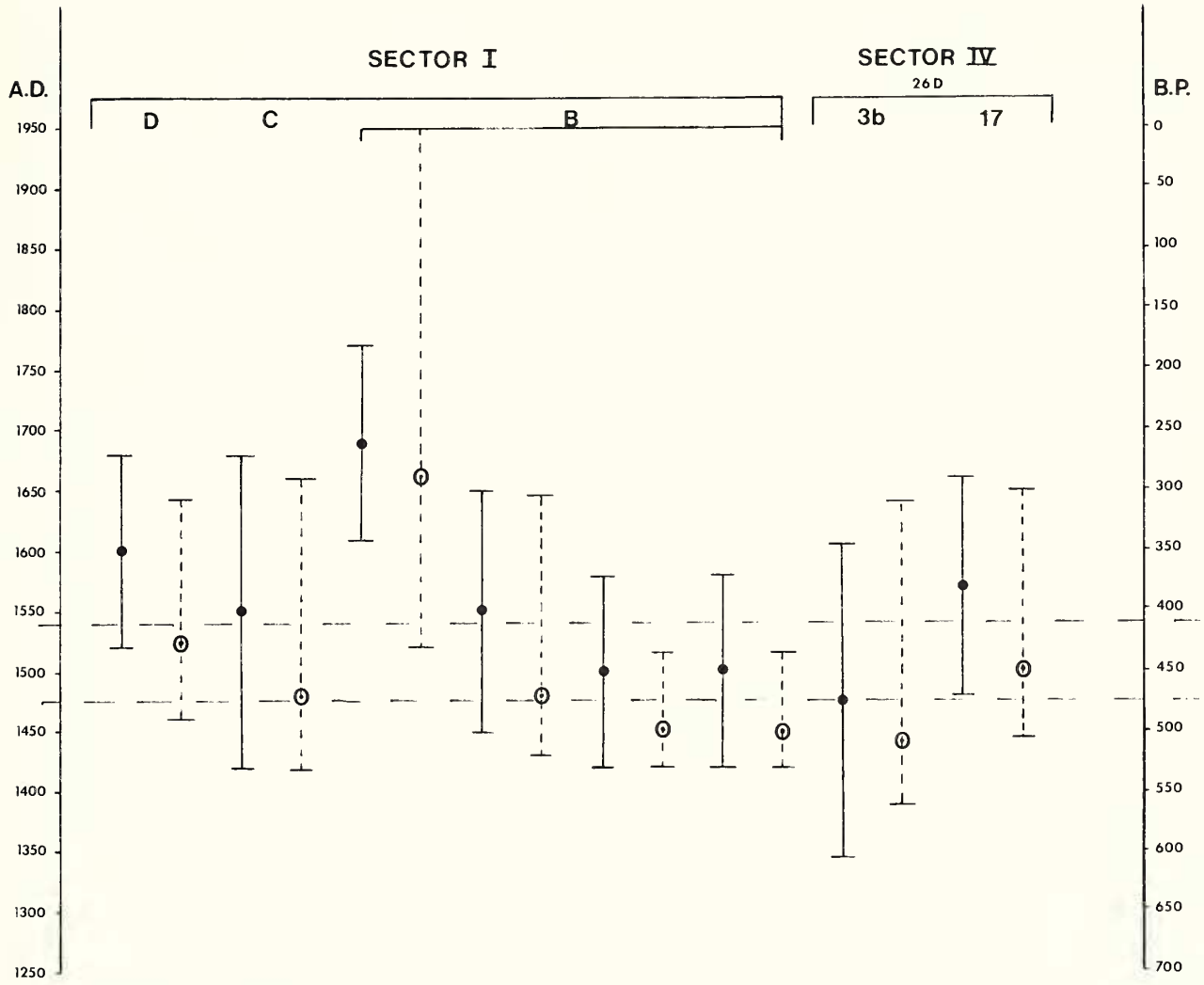


Fig. 60.—Radiocarbon dates from Lo Demás, run by the Brock University Geological Sciences Radiocarbon Lab (BGS) (*see* Table 3). Solid vertical lines are uncorrected dates, one standard deviation around the mean. Dashed vertical lines to right of solid lines are one standard deviation ranges for the same dates calibrated according to the tables published by Stuiver and Pearson (1986). The dashed horizontal lines bracket the best age estimate for Lo Demás based on the artifacts and the historical sources. Capital letters under Sector I refer to stratigraphic complexes; numbers under Sector IV are levels.

Complexes B and C (Figs. 29e, 30c), two pyroengraved gourd fragments from Complexes B and C with LH Ica 9 style decoration (Fig. 44a, b), two south coast Late Horizon style (Menzel, 1967) figurine fragments in Complex C (Fig. 34), several Pachacamac Inka blackware sherds from Complex D (Figs. 31o, p, 36), an Ica Inka sherd (Fig. 31g) from Complex D, a possible Cuzco Inka sherd from Complex D (Fig. 31h), and a *llanke* sandal from Complex D (Fig. 49). Two sherds from Complex D (the latest complex) have designs similar to Ica 10 decoration (Fig. 31e, f); Menzel (1967) places Ica 10 in the early Colonial Period, after the disruption of the Inka empire but before the advent of significant European influence. Together with a 1 × 1 cm piece of possible cowhide and one specimen of an Old World plant found near the top of Complex D, these sherds suggest that the occupation of Lo Demás ended early in the Colonial Period. The lack of European ceramics or other artifacts of any kind in the Lo Demás deposits indicates that the occupation of the site probably did not continue very long into the Colonial Period. Early post-conquest abandonment of the site makes sense given the extremely rapid depopulation at Chincha following the Spanish conquest (Cook, 1981:160).

Late Horizon elements in Sector IV include an Inka plate fragment from level 26–5 of Subunit 26D (Fig. 27c), a Provincial Inka sherd in level 26–13b in the same excavation (Fig. 32d), a Late Horizon spindle in level 26–5ci in 26D, and the rectangular *adobes* used in the construction of Building IV–2. These *adobes* are related stratigraphically to the lowest excavated level in Subunit 26D; together with the occurrence of Late Horizon artifacts in this excavation and in Sector I, this use of a Late Horizon, Inka-related architectural style demonstrates contemporaneity between Sectors I and IV. The radiocarbon dates (*see above*) support this conclusion.

Both sectors, however, also contain elements related to Menzel's (1966) LIP 8/early LH, pre-Inka conquest Chincha style. In Sector I, these elements include five rims with the Chincha Rim Scallop design feature distributed among Complexes B to D (Figs. 23p, r, s, 25a), a sherd with Chincha Ica decoration from Complex B (Fig. 29f), a Chincha style figurine from Complex C (Fig. 33), a sherd with a Chincha style textile fish design from Complex C (Fig. 30d), and several sherds from Complexes B and C with shoulder/neck banding, which may be a Chincha Ica feature (Figs. 29a, b, 30a, b). Another sherd with probable shoulder/neck banding came from Complex D (Fig. 31a). In Subunit 26D, Sector IV, Chincha style finds include several rims with the Chincha Rim Scallop design feature from levels 26–13b and 26–13bi (Figs. 23f, 25j), a sherd with shoulder/neck banding from level 26–16 (Fig. 32a), and a Chincha style figurine leg from level 26–14b (Fig. 38a). A Chincha style figurine (Fig. 37) was also found in the quebrada profile, in a level equivalent to level 26–12d.

A number of artifacts from the excavations at Lo Demás mix elements of both Chineha (Menzel, 1966) and Late Horizon styles. The spindle whorls fit Kroeber and Strong's (1924:32–33) shape criteria for Chincha style whorls, but paste and firing seem closer to their description of Late Horizon, Inka-related examples (Chapter 8).[113] One of the Late Horizon figurine fragments from Complex C in Sector I has some traces of Chincha style figurine features (Fig. 34a).

As the above lists show, the chronological markers from Lo Demás include elements related to Menzel's (1966) LIP 8/early LH Chincha style and to a variety of Late Horizon styles. The stratigraphic association of elements pertaining to these supposedly discrete units shows that the Chincha style was in use during the Late Horizon, as I have argued earlier in this study (Chapters 7 and 8). This discovery raises an important question: is the Chincha style as defined by Menzel (1966) *also* the pre-Inka, late Late Intermediate Period style of the Chincha valley, or is it temporally confined to the Late Horizon? I cannot answer this question definitively until more information is available from stratigraphic contexts which clearly pre-date the Inka conquest of Chincha,[114] but the data at hand provide some clues to the origin of the Chincha style. First, Uhle (1924; Kroeber and Strong, 1924; Menzel, 1966) found Late Horizon pottery along with Chincha style vessels and figurines in some of the burials which he excavated in Chincha. Menzel (1966) resolves this problem by extending the Chincha style into the early Late Horizon and proposing that Inka influence arrived before the Inka armies. This argument depends on demonstrating that all of the Chincha style burials without Late Horizon elements are earlier than those with LH material. Unfortunately, the information provided by Uhle (1924) was insufficient for Menzel (1966) to make this distinction.

Second, one of the most ubiquitous features of Chincha style pottery, the Chincha Rim Scallop (Menzel, 1966:92), is quite likely derived from an Inka design element—pendent triangles are a common feature of Inka ceramics. Six sherds from the Lo Demás excavations have the Chincha Rim Scallop design (Figs. 23f, p, r, s, 25a, j). Menzel (1976: 135) denies the Inka connection, as she must in order to maintain the chronological integrity of the Chincha style, noting a difference in the execution of Inka and Chincha pendent triangles (Menzel, 1976:146). However, if the Chincha Rim Scallop was borrowed from the Inka design, there is no reason to assume that the local imitation would be exactly the same as the source. For instance, Ica Inka ceramic decoration described by Menzel (1976) is not identical to the Inka source designs, nor are other styles recognized throughout the Andes as provincial Inka. However, Menzel also confirms that the Chincha Rim Scallop is a design feature which first appears in LIP 8 Chincha style ceramics (D. Menzel, personal communication, 1987). This fact argues in favor of the Chincha style as a predominantly Late Horizon pottery style with roots in the Late Intermediate Period (Sandweiss, 1992:41).

Cultural Connections and Affiliations

Many of the same data which provided clues to the chronology also help determine the cultural affiliations of the Late Horizon inhabitants of Lo Demás. Ceramics and figurines are particularly important in this respect. The Lo Demás assemblage

includes items with Inka, Ica, and Pachacamac affinities, in addition to materials in the local, Chincha style.

In Sector I, Inka influence is seen in the presence of several potsherds in Inka or Inka-related styles, and of two figurine fragments found together in Complex C. Based on his analysis of Guaman Poma's drawings, Mejía Xesspe (1975–1976:37) believes that *llanke* sandals like the one found in Complex D were worn only by people of Inka affiliation. The pendent triangle design known as the Chincha Rim Scallop may also represent a local borrowing from an Inka design element (*see above*).

In Sector IV, both the presence of several Inka or Inka-related sherds and the use of rectangular *adobes* in Building IV–2 provide evidence of Inka contacts.

Contact with or influence from Pachacamac is seen in the blackware tuber-shaped vessel sherds and in the blackware faceneck sherd, all from Complex D in Sector I. Perhaps the most pervasive evidence of external contacts concerns Ica: a variety of potsherds from both sectors have designs related to Ica 9 and other Late Horizon Ica styles, as well as with presumably earlier Ica decoration; two pyroengraved gourd fragments have Ica-like designs; and Building IV–1 in Sector IV is similar in architectural design and in decoration (geometric sea birds) to an Ica 10 house model pot from Ica (Fig. 18; *see also* Menzel, 1976:Plate 63–100).

The local, Chincha style (as defined by Menzel, 1966) occurs on potsherds and figurines from both sectors. I have argued above that this style persisted throughout the Late Horizon (and may have been significantly altered at the beginning of that period). However, Menzel's (1971) and Wallace's (1972) brief descriptions of pre-LIP 8 Chincha pottery suggest that the Chincha style *does* represent the local culture. More telling is the fact that Menzel (1966) was able to define a set of features unique to Chincha and to distinguish them from other late pre-Hispanic pottery styles. Regardless of the exact chronological placement of the Chincha style, its uniqueness supports Menzel's contention that it represents the local Chincha culture. I therefore suggest that the Late Horizon inhabitants of Lo Demás were natives of Chincha who maintained extensive contacts with other cultures/areas, and were not *mitimaes* colonists brought from elsewhere by the Inka.

Subsistence

Although I have not attempted to quantify the contribution of different plants and animals to the diet of the late pre-Hispanic inhabitants of Lo Demás, a qualitative assessment is possible.

The bulk of the meat consumed at the site clearly came from maritime species. Fish[115] and shellfish were most important in both sectors, but sea mammals and sea birds also provided some meat. The contribution of terrestrial fauna was limited; guinea pigs[116] were the principal terrestrial meat source in Sector I, while some camelids and cervids were consumed along with guinea pigs in Sector IV. Paralleling this conclusion from the bones, the animal coprolites show that while guinea pigs were kept in both sectors, live camelids were present only in Sector IV. The fish and shellfish also show a difference between the two sectors; the larger, Perciform fish and bigger individuals of the larger mollusks were more common in Sector IV than in Sector I. Furthermore, the Sector IV sample contains a higher percentage than the Sector I sample of shells from species which were not collected locally. These contrasts probably reflect differential or privileged access to resources on the part of the Sector IV elite residents.

Plant foods were also important in the diet at Lo Demás. Although some edible wild plants are present, field cultigens comprise the majority of the identified plant remains. The predominant plant organs recovered are either the edible part of the plant or else are elements which come attached to the edible portion. Among the edible plants, maize and peanuts predominate. In Sector I, peanuts are most common in the lower complex (B) and decrease in importance in the succeeding complexes (C to D). Maize shows the opposite trend, increasing in abundance through time and predominating in Complexes C and D. Coca is limited to Sector IV, providing further confirmation of the elite nature of that sector.

Domestic Activities

The excavations at Lo Demás found evidence for a variety of domestic activities. Most of the pottery was used for cooking, although it also seems to have been used for serving and eating, liquid containment, and storage (probably short term). The presence of several grinding stones suggests that some food was processed by grinding. Food processing may also have been done using expediently produced and highly expendable cobble cortex flakes. Other household activities which probably took place on a daily or frequent basis include raising guinea pigs, spinning, sewing (to patch and perhaps make clothes), and possibly weaving. Wood fragments,

often with cut marks, show that woodworking was carried out at the site, perhaps to make the wooden tools which we found in the excavations. Pieces of polychaete worm calcareous heads were probably used as woodworking rasps. Both sectors (I and IV) contain indicators of all of the activities listed in this paragraph.

Fishing and Fish Production

Several lines of evidence indicate that fishing and fish processing were important activities in Sector I of Lo Demás, though not in Sector IV. Five net fragments were visible in stratigraphic position in the quebrada profile immediately to the east of the Sector I excavations, and we found 85 fragments distributed throughout Complexes B to D, the main occupation levels of the excavation. The small average mesh size is appropriate for *anchoveta* and sardine, which are the two predominant fish species in the deposits. The fact that nets and net fish predominate also argues for large-scale "industrial" fishing to produce fish in quantity for tribute and/or exchange as well as for local consumption.

Among the scarce manufactured artifacts found in the excavations was a *mallero,* or net-gauge, a wooden implement used to make and repair nets. Fishermen in Chincha today repair their nets with wooden *malleros* like the Lo Demás specimen; this activity takes place in front of the fishermen's houses, and the broken fragments are discarded in the street in a manner analogous to the archaeological net fragment occurrences at Lo Demás. According to local fishermen, the *mallero* recovered from Lo Demás would produce nets with a mesh size similar to the excavated fragments. Bone needles found in Sectors I and IV may have been used for netting, as they are too large for ordinary textiles.

In Sector I, we also found a small copper hook and 12 of the half-bobbin objects. This latter category of artifact may be related to fishing, given its known distribution. Cobble cortex flakes from Sector I show use wear which may have resulted from scaling and cleaning fish; one still had fish scales adhered to it. Such flakes are fairly abundant in this sector, although only a few were analyzed (Kvietok, 1988).

The most common skeletal elements of fish in the study sample from Sector I were various disarticulated cranial bones; we also found 84 intact fish heads. Gills appeared in abundance in several levels. Gills and internal organs are the first parts of a fish removed after capture to increase preservation, while heads would be removed from salted and/or dried fish intended for exchange in order to reduce weight and bulk. Tests for salt content in the periosteum of fish bone from Sector I of Lo Demás revealed more salt on the fish than on other animal bones from the same contexts (Altamirano, 1984), suggesting preservation of fish by salting and drying. This suggestion must be tested through further lab work.

In the 1983 test pits in Sector I, excavation revealed a series of post holes and channels dug into Complex A from Complex C. These holes formed a pattern analogous to a modern fish salting and drying workshop in Tambo de Mora, again suggesting that salt fish production was carried out at Lo Demás. Two mats associated with fish scales and salt may represent another method of fish salting and drying, similar to a technique documented earlier in this century. These mats came from Complex C.

In Sector IV, disarticulated cranial elements and intact crania were common but not as frequent as in Sector I (41.5% by NISP in Sector IV, as opposed to 60.8% in Sector I). The Sector IV test pit (26D) had no net fragments or indications of fish salting or drying, although we did find a bone tool which resembles a *mallero,* a possible bone netting needle, and seven half-bobbin objects, including the only articulated specimens from Lo Demás. Based on the limited sample from Sector IV, if the residents of this elite sector fished, they do not seem to have done so with the same intensity as the residents of Sector I.

Production Other Than Fish

The excavations in Sector I provided abundant evidence for the consumption or use of products other than fish—plant foods, pottery, textiles, and metal—which do not seem to have been produced by the inhabitants of this sector. Indeed, the utilized resource and tool inventories provide evidence for only one kind of production other than fishing and the domestic activities discussed above; the abundance and types of cotton remains suggest that the Sector I residents may have grown cotton for their nets, for thread, and possibly for weaving cloth. The botanical remains also indicate that the inhabitants of Sector I harvested (and perhaps encouraged) stands of wild marsh plants, especially reeds. Reeds could have been used for boats, as well as for the

walls and matting documented in the Sector I excavations and quebrada profile.

The situation in Sector IV is quite different. Evidence for fishing and fish production in the Subunit 26D sample is less than in the Sector I samples, but the Sector IV botanical remains provide very strong evidence for the production of gourd utensils in Building IV–2. It may be that gourd utensil production was a by-product of gourd acquisition or even cultivation by the fishermen, who would have used whole gourds as net floats (J. Quilter, personal communication, 1991). The Sector IV botanical remains offer stronger evidence than in the Sector I sample for cotton fiber processing and for woodworking, although the artifact inventory indicates fiber processing in both sectors.

The Pachas collection of metal pieces from Sector IV and the surface collection from the bluff to the north of Lo Demás suggest that a metallurgical workshop was located somewhere in the vicinity of the site, though the lack of slag deposits in the surviving portion of Lo Demás argues against the workshop being located in the immediate vicinity of the site as it now exists.

Curanderos and Ritual Activities

The Sector I remains indicate another kind of activity carried out by a full- or part-time specialist: curing. The guinea pigs in Complexes A to C provide the strongest evidence for a *curandero* at the site; these animals had had their stomachs slit but had not subsequently been eaten. Use of guinea pigs as diagnostic devices in curing rituals both today and in late pre-Hispanic times involves rubbing the patient's body with a live guinea pig and then cutting the animal's stomach open to inspect the entrails (e.g., Arriaga, 1968 [1621]:210; Bolton and Calvin, 1981:315–316). This ritual produces guinea pig corpses identical to those found at Lo Demás.

The botanical remains provide further evidence for the presence of a *curandero* in Sector I; the sample from that sector has over 50% more medicinal plant species than the sample from Sector IV, even though the samples are comparable in size (NISP). The presence of masticated dicot fibers in the stomach contents of a late pre-Hispanic burial in Sector II also argues for a curer in the area.

The broken figurines and the interment of bird corpses beneath floors and walls provide further evidence of ritual activity in Sector I, though these finds do not indicate whether that activity involved ritual specialists.

Intraregional and Long-Distance Exchange

The list of products found in Lo Demás which do not seem to have been produced by its inhabitants (*see above*) indicates the kinds of items which were circulating through local exchange (or redistribution) in Late Horizon Chincha. The Lo Demás samples also provide limited evidence of intraregional (sensu Netherly, 1977:Chapter VI) and long-distance exchange and some information on the modes of transport used by the long-distance traders.

Some of the less common mollusk species found in Lo Demás did not come from the shoreline in the vicinity of the Chincha valley, but rather must have come from some distance to the north or south (Paracas, the Chincha Islands, or the coast between Chincha and Cañete). The rare sea mammal bones would also have come from animals killed in these areas. The presence of these species is evidence of intraregional exchange. However, "exchange" may not be the proper term here, as the Chincha fishermen could have travelled to the areas listed above to hunt or collect (rather than exchange for) the sea mammals and shellfish; early in this century, Tambo de Mora fishermen still regularly visited the Chincha Islands (Murphy, 1921).

The foreign pottery in Lo Demás must have arrived there as the result of long-distance exchange (however administered) with Ica, Pachacamac, and possibly Cuzco. My impression is that the Cuzco Polychrome A sherd from Sector I (Fig. 29c) is a local imitation, given the coarse temper, weak paint colors, and somewhat irregular design execution. On the other hand, the bright colors and sharply delineated, carefully executed design on the Inka plate fragment from Sector IV (Fig. 27c) suggest that this sherd is from an imported vessel. The exact concordance in form and decoration between the blackware faceneck jar from Sector I and vessels from Late Horizon Pachacamac argues in favor of the Lo Demás piece being an import. The blackware tuber pot sherds (Fig. 31o, p) from Sector I also appear to be imports; other tuber pots known from Chincha are oxidized, while a Pachacamac example is reduced-fired. Furthermore, the two Lo Demás tuber pot sherds are thinner and more delicate than almost all of the other pottery from the site, indicating a separate source, or at least a different production

process. The Pachas metal collection from Sector IV of Lo Demás may represent trade goods, although the copper was probably worked and possibly mined locally.

The three bits of the warm water mollusk *Spondylus* were certainly acquired through long-distance exchange, as this species is almost never found south of the Peru–Ecuador border. One of the more intriguing questions about Chincha archaeology is why this species is not more abundant in late pre-Hispanic sites, considering that the ethnohistoric evidence is usually read as indicating that *Spondylus* (*mullu*) was the most important item acquired in the north by the Chincha merchants (Rostworowski, 1970). The excavations at Lo Demás confirm the scarcity of *Spondylus* in Chincha and provide indirect evidence to support the hypothesis advanced in Chapter 2 that the Chincha merchants acted as agents of the Inka and not as independent entrepreneurs.

Two pieces of evidence from the excavations at Lo Demás are pertinent to the transportation aspect of long-distance trading. First, the abundance of camelid excrement in Sector IV demonstrates that live camelids were brought into this part of the site. At the same time, the relative scarcity of camelid bones in the midden and the infrequent use of wool in the Lo Demás textiles indicate that these animals were not often butchered or sheared at the site. The best explanation for their presence is that they were used to transport something into and/or out of the site (*see* Chapter 12 for a further consideration of this matter).

The second piece of information about long-distance transport concerns the construction of a jetty on the shoreline in the vicinity of Lo Demás at the beginning of Stratigraphic Complex D (Sector I). The presence of a jetty would explain the reversal in dominance of the sand-dwelling clam *Donax* and the rock-dwelling mussel *Semimytilus* between Complexes C and D, and would accord (to a lesser degree) with a similar trend in the two dominant fish species, *anchovetas* and sardines. Loading and unloading large trading rafts on the open Chincha shoreline would have required a jetty or similar construction. Such a facility built to service the lord of Chincha's ethnohistorically documented long-distance trading activities would be located close to Lo Demás, because the site lies almost directly between the sea and La Centinela (*see* Fig. 1). It is probably not coincidental that the series of cobble and mud mortar walls which cover Sector I of Lo Demás—the most complex architecture in that sector—were built at the start of Complex D. Also, the Pachacamac–Inka potsherds imported from the central coast of Peru occurred only in Complex D.

Elite and Common Residents

One theme which has run through much of this chapter is the evidence that Sector IV was occupied by people who held an elite status relative to the inhabitants of Sector I. The most direct indication of this status hierarchy is the architecture; Sector I contains small, ephemeral structures, while Sector IV consists of large, monumental structures, at least one of which has painted decoration (Room IV–1a in Building IV–1). As Moseley (1975) and others have argued, the construction of monumental buildings requires some people with sufficiently high status to mobilize the necessary corporate labor groups.

The two sectors differ in other ways, as well. In terms of diet, Sector IV had more large fish, shellfish, terrestrial mammals, and coca than did Sector I, indicating privileged access to these resources by the Sector IV residents. In Sector I, economic activities were confined to fishing, net manufacture and repair, fish processing, and domestic chores—the daily routine of fishing families throughout the world. In contrast, the Sector IV residents seem to have concentrated less on fishing but to have carried out artesanal production of gourds, cotton products, and perhaps wooden objects.

Finally, the presence of Inka type rectangular *adobes* in Sector IV walls indicates a closer connection with the Inka administrators of the valley. Few sites in the valley aside from the Inka administrative center at La Centinela have structures made of these *adobes*. The best candidate for an imported Cuzco Inka sherd[117] also came from Sector IV.

Given all of the data pointing towards the elite nature of Sector IV, I conclude that it was probably the residence and center for a fishing local level lord.[118] The identification of status differences between the two sectors at Lo Demás provides the key to determining between the ethnohistoric models presented in Chapter 2 and evaluated in the following, concluding chapter.

CHAPTER 12

LO DEMÁS AND THE ARCHAEOLOGY OF SPECIALIZATION ON THE ANDEAN COAST

The ethnohistoric record for the Andean coast at the time of the Spanish conquest indicates quite clearly that occupational specialization was an important mode of socioeconomic organization. For the Chincha valley, however, the documents do not provide a wealth of details concerning the organization of specialization, nor do they speak about daily life and local interactions. The record for the north coast of Peru offers more information on the organization of specialization (though the details of daily life remain obscure), but we cannot assume a priori that the north coast and the south coast (Chincha) were necessarily alike. The differences in the ethnohistoric models of specialization among late pre-Hispanic coastal fishermen could reflect real differences in organization, and not simply the smaller number of sources available for Chincha. Furthermore, the ethnohistoric record in general cannot be taken as an unbiased one; the native informants may have had reasons to misrepresent their economic and associated sociopolitical structure, and the Spanish observers certainly brought their own personal and cultural backgrounds and biases to their interpretations of what they observed and were told. In this context, a source of information independent from the ethnohistoric record is necessary to evaluate and contrast the different document-derived models.

Although archaeological data and interpretations have biases and problems of their own, they are not subject to informant misrepresentation, and therefore can provide independent tests of the models derived from the documents. It was with these concerns in mind that I designed and executed the Chincha Fishermen Project as an archaeological study of later pre-Hispanic coastal specialization. The target population consisted of a group of fishermen for whom the ethnohistoric record offers several pieces of information crucial for such a study: the population was occupationally specialized, residentially discrete, temporally constrained (late pre-Hispanic through early Colonial Period), geographically located, and physically described.

This concluding chapter evaluates the correspondence between the ethnohistoric and archaeological records for the fishermen of Chincha, assesses the archaeological data concerning specialization in terms of the ethnohistoric models described in Chapter 2 and according to the criteria discussed in Chapter 3, and places the results of this study in the context of other archaeological studies of later pre-Hispanic coastal specialization.

Lo Demás as the Chincha Fishermen's Settlement

Identification of Lo Demás as part of the Chincha fishing settlement was necessary before the archaeological data from the site could be used to assess specialization. The orientation of Lo Demás parallel to the shoreline and extending north from the vicinity of La Centinela fits the documentary description for the location of the fishing settlement, and the long, narrow configuration of the site corresponds to the "Aviso" statement that the settlement "looked like a road." The chronology of Lo Demás—Late Horizon to early Colonial Period—is appropriate. The abundant evidence that the inhabitants of the site fished, processed fish, and hunted or collected other maritime resources confirms that they were fishermen, whatever other specialized or nonspecialized activities they may have carried out. There is little doubt that Lo Demás was, indeed, part of the fishing settlement described in the "Aviso" document (Rostworowski, 1970).

Specialization at Lo Demás

In Chapter 2, I reviewed the ethnohistoric data for late pre-Hispanic Chincha and for the north coast of Peru. I used these data to derive to models of economic organization for the fishermen, Model One based exclusively on the Chincha sources and Model Two incorporating the north coast record. In Chapter 3, these models were discussed in terms of four parameters of specialization (context of production, concentration of productive activities, constitution of production units, and degree of specialization [Brumfiel and Earle, 1986; Costin, 1986]) and a set of archaeological expectations was formulated for each of the two ethnohistoric models.

According to Model One, the Chincha fishing settlement should have evidence for fishing but not for any other class of production. This fishing evidence

should be evenly dispersed throughout the site. The settlement should contain both commoner and elite sectors and should have some evidence of links with the Inka state and the paramount lord of Chincha. Expectations for Model Two differ in that the elite sectors should have evidence of auxiliary specialists attached to the fishing lords; in the commoner sectors, evidence for fishing should still be evenly dispersed. Links to the governing elite/institutions are still expected. According to both models, the fishing settlement should contain products obtained through exchange with other local producers. Both models also suggest that the fishing settlement should show temporal continuity of group identity.

The most important archaeological information for evaluating and contrasting the ethnohistoric models is the differences between Sectors I and IV, interpreted respectively as the loci of common fishermen and of fishing lords and their retainers. The commoner inhabitants of Sector I seem to have concentrated on a single productive activity—fishing—while the elite residents of Sector IV had attached specialists, in accordance with Model Two.

Excavations in Sector I found indications that many of the nonmarine products in the site were acquired from other producers, but no evidence of nonfishing production. Fishing tools include net fragments, a hook, and a net-making tool. Fish remains include branchia and abundant cranial elements (including whole heads), which suggest that fish were processed for trade as well as consumed at the site. Evidence for several methods of fish salting supports this assertion.

The plant remains from Sector I consist mostly of edible parts and elements which come with edible parts in a natural package (e.g., corn kernels and cobs), and the tool inventory does not include farming tools. These facts argue that the site's inhabitants did not farm. The location of the site away from areas which could have been agricultural fields during the late pre-Hispanic occupation of Lo Demás also argues against the occupants having been farmers, as do the differences between the pottery assemblage from Lo Demás and that from Huacarones, a contemporary farming site. However, the Sector I inhabitants may have grown some cotton for their nets and thread, and they also seem to have harvested wild marsh plants, mainly reeds for use in construction, matting, and possibly boats. Furthermore, the inhabitants of Sector I carried out a variety of domestic activities including cooking, spinning and sewing, woodworking, and raising guinea pigs. One (or more) of the Sector I residents seems to have been a *curandero,* which would have required at least part-time specialization. The excavations in Sector I found several potsherds and figurine fragments which indicate direct and/or indirect links with the Inka and with other Late Horizon coastal centers such as Pachacamac. Pachacamac was probably the most powerful coastal shrine during and before the Inka occupation of the central Andean coast. The ethnohistoric data indicate that Chincha had a special relationship with Pachacamac, so it is not surprising to find archaeological evidence of contact. The Uhle collection from Chincha also contained Late Horizon pieces from Pachacamac (Menzel, 1966).

In contrast to the commoner nature of Sector I (as indicated by the architecture and the organic remains), Sector IV was occupied by elites, probably a local level fishing lord and his retainers.[119] The archaeological sample from this sector does not provide much evidence for fishing and fish processing, but it does indicate that other categories of nondomestic production took place in the elite sector.

The abundance of cotton remains in Sector IV suggests a greater emphasis on fiber processing than in Sector I. This find is interesting in light of the discovery of a textile-processing area in the Inka sector at the nearby site of La Centinela (Morris, 1985; *see* Fig. 1). The Lo Demás Sector IV sample came from Building IV–2, which was built of rectangular *adobes*—an Inka architectural feature. These data suggest that fiber processing in Chincha, at least on a large scale, was carried out under the supervision of the elites, particularly those associated with the Inka; this conclusion is not surprising considering the importance of cloth in the Inka world (Murra, 1962, 1980).

The botanical remains provide clear evidence of another kind of production in Sector IV: the manufacture of gourd utensils. It is unclear whether these gourds were intended for use by the local lord (perhaps as a substitute for scarce pottery), for exchange, or both. Several early sources mention gourds as one of the important items traded by Chincha merchants (Rostworowski, 1970:156–157).

The Pachas metal collection from Sector IV of Lo Demás and the surface finds from the bluff north of Lo Demás indicate that there was a metallurgical workshop producing copper objects somewhere on the north side of the valley. This workshop may also

have been located in the domain of the fishermen and, like the gourd and textile workers of Sector IV, attached to the fishing lord.

The abundant camelid dung in Sector IV (and its absence from Sector I) suggests that the fishing lord shipped some products by llama. The scarcity of wool textiles and the small number of camelid bones in the subsistence remains leave transport as the most likely function for the camelids which deposited the dung. Most likely, the cargos included items for exchange, as well as the tribute paid to the Inka and perhaps to the paramount lord of Chincha. If the documents are correct and each specialist paid tribute in the "things of his office," then fish should have composed the bulk of the cargos. Gourds and perhaps metal objects might also have been sent. The archaeological sample from Sector IV sheds no light on this problem, but analogy to work by Marcus (1987*a*, 1987*b*) at the nearby fishing site of Cerro Azul suggests that fish *were* the major cargo—Marcus found camelid dung scattered throughout a room near the entrance to a rectangular compound; this compound had storerooms full of dried fish.

Although the excavated pottery from Sector IV is too scarce to offer more than (strong) hints, the architecture of this sector shows clear links with the Inka. Indeed, Lo Demás is one of the few Chincha sites with Inka-related architectural features, other than the Inka administrative center at La Centinela. This fact may show a particular desire on the part of the Inka administrators to forge links with the fishing lords.

There is no apparent hiatus during the occupation of Lo Demás, and the site contains pottery and other artifacts in the local style. The earliest construction phase in Building IV–2 (below the base of test pit 26D) may be Late Intermediate Period in date. These facts argue in favor of temporal continuity in fishing group identity, one of the expectations for both ethnohistoric models. On the other hand, the absence of pre-Late Horizon deposits in Sector I and the major reconstruction of Building IV–2 early in the Late Horizon suggest a significant change in the distribution of the Chincha fishing population at the beginning of the Inka occupation. In Sector I, increasing maize abundance in the upper stratigraphic complexes (C and D) and the construction of more formal architecture (cobble and mud mortar walls) at the start of Complex D may reflect an improvement in the economic status of the fishermen during the course of the Late Horizon.

In summary, the archaeological data from Lo Demás suggest that the common fishermen were specialized, but that their life did not consist simply of fishing, dancing, drinking, and "lo demás." In addition to the demands of daily life (of the sort not mentioned in the documents), these fishermen also made many of their tools and possibly cultivated or encouraged stands of the plant resources needed for these tools. In contrast, the fishing lord probably did not fish at all, but instead supervised specialized craft production of gourd utensils, fiber products, and possibly metal. The lord was also responsible for sending his subjects' tribute (fish? gourds? metal objects?) by camelid to the Inka administrators of the valley, with whom he seems to have maintained close relations. The lord probably also organized local and/or long-distance exchange.

The work at Lo Demás suggests that ethnohistoric Model Two applies to the Chincha fishermen. The strict specialization suggested by the Chincha documents (Model One) applies best to non-elite members of the specialized groups, in contrast to the associated elites. Even the non-elite specialist groups could include full- or part-time individual specialists such as *curanderos*. Within the orbit of the elites, the strict specialization model (One) breaks down, at least partly; specialist lords could have attached craft specialists producing commodities not related to the specialty of the lords' other subjects.

The null hypothesis for the Chincha fishermen (no specialization) denies validity to any of the ethnohistoric sources, all of which argue for some kind of specialization. Because the archaeological data fit the expectations for one of the ethnohistoric models quite well, I reject the null hypothesis.

Specialization on the Andean Coast

The ethnohistoric data on coastal specialization raise an important question which cannot be answered directly with the evidence from Lo Demás—was specialization an old tradition on the coast when the Inka conquered it, as Rostworowski (1970, 1977, 1981) believes, or was it an Inka invention or modification of some other pre-existing system? The Chincha documents do not discuss the nature of pre-Inka economic organization. The ethnohistoric record for the north coast suggests that the system of specialization seen in Model Two *is* pre-Incaic; the areal extent of fishing specialists on the north coast, and the fact that the fishing lords who are named have names in coastal languages, argue for the an-

tiquity of fishing specialization (*see* Hart, 1983; Netherly, 1977; Ramirez-Horton, 1982; Rostworowski, 1981). However, only archaeology has the potential to answer definitively the question of origins. Therefore, the following paragraphs briefly review the archaeological data for fishing specialization from other coastal sites in the central Andes. This review concentrates on Late Intermediate Period and Late Horizon sites in order to address the role of the Inka in coastal specialization. I focus on fishing specialization because 1) it is the category of full-time specialists (those who did not plant fields) that is best documented in the ethnohistoric record, and 2) data from fishing sites are most comparable to the results from Lo Demás.

Because the earliest documented occupation in Sectors I and IV at Lo Demás dates to the Late Horizon, after the Inka conquest of Chincha, this site does not aid in assessing the *origin* of coastal specialization. A related problem is the possibility that Lo Demás represents a group of *mitimaes* moved to Chincha by the Inka as part of an empire-level archipelago. However, the fact that pottery, figurines, textiles, and other artifacts are more frequently decorated in the local, Chincha style than in any foreign style argues that fishermen were local, Chincha folk, even though the fishing settlement at Lo Demás dates entirely to the Late Horizon.

Cerro Azul, in the Cañete valley, is the excavated late pre-Hispanic fishing site closest to Lo Demás, and the one which provides the best evidence for pre-Inka fishing specialization. Although originally excavated in the 1920s by Kroeber (1937), only the recent work by Marcus (1987*a*, 1987*b*) offers information useful for assessing fishing specialization. Marcus's excavations concentrated on a Late Horizon Inka structure (not related to fishing) and on two large Late Intermediate Period structures (Structure D and Structure 9) (*see* Chapter 7 for a possible problem in dating the Cerro Azul site). Both of the latter two buildings had rooms which had been devoted to fish storage (mostly *anchovetas* and sardines), and in Structure 9, the number of rooms used for this purpose increased through time. Marcus considers Structure 9 as the center of a low-level administrator and Structure D as an elite residential compound, but one which also housed a number of other activities. She found evidence of two major activities in Structure D in addition to fish storage—weaving and plant drying and processing. Two rooms in this structure were devoted to raising guinea pigs, and a patio at the entrance to the compound contained abundant llama feces.

Comparison of the activities carried out in Structure D with those documented for Building IV–2 at Lo Demás (also a large, rectangular, elite residence and/or workspace) reveals a number of similarities. The llama dung at Lo Demás indicates that some cargo was carried out of Sector IV; given the evidence from Cerro Azul, that cargo may well have included fish stored inside Building IV–2. Fishing artifacts from Cerro Azul included net fragments, net weights, and a wooden *mallero*. This tool inventory is similar to that from Lo Demás. The list of plants and plant parts reported by Marcus (1987*b*: 61) from a midden deposit in Structure D is similar to the botanical materials from Lo Demás, although more exact comparison must await the publication of the complete list from Cerro Azul. Maize and cotton were the most important species there, as at Lo Demás. Marcus (1987*b*:61) writes that the

> "presence of such varied plant parts suggests that Cerro Azul's corn and cotton probably did not come from very far away; but it does not necessarily rule out the possibility that those products were obtained from neighboring farmers, rather than having been grown by the occupants of Cerro Azul."

Though limited by its focus on the elite sector of the site, the Cerro Azul work supports ethnohistoric Model Two for the economic organization of the fishermen, rather than the strict specialization of Model One.

If Marcus (1987*a*, 1987*b*) has correctly dated Structures D and 9 at Cerro Azul to the Late Intermediate Period, before the Inka conquest of Cañete, then this site offers strong support for Rostworowski's hypothesis that specialization is a pre-Inka tradition.

No Late Intermediate Period or Late Horizon sites pertinent to the question of fishing specialization have been excavated on the central coast of Peru. On the north coast, a number of sites offer relevant information; however, none provides as clear a picture as Lo Demás or Cerro Azul, despite the fact that the most detailed ethnohistoric evidence for fishing specialization comes from the north coast.

In the Moche valley, Keatinge (1975) excavated a Late Intermediate Period assemblage at Cerro La Virgen in which the subsistence remains included seafood and agricultural produce, as at Lo Demás. Information on the species and plant or animal parts represented in the deposits is not provided. The

artifactual evidence at Cerro La Virgen clearly indicates fishing (nets, hooks, and sinkers) and the "total spectrum of weaving activities from resource procurement to finished product" (Keatinge, 1975: 224). These data concord well with the evidence from Cerro Azul and Lo Demás.

Keatinge also uses two lines of evidence to propose that the site's inhabitants farmed as well as fished. First, he cites the proximity of the site to a large complex of state-built fields (Keatinge, 1975: 224). This criterion is not conclusive, as ethnohistoric data such as the "Aviso" for Chincha (Rostworowski, 1970) suggest that fishing settlements could be located in the fertile valley bottoms where agriculture was also carried out. Second, Keatinge (1975: 225) found "numerous donut-shaped stones which probably served as maee-heads or, more likely, as weights for digging sticks used in farming." One of the illustrated examples of these artifacts (Keatinge, 1975:Fig. 16–I) is identified in the figure caption as a possible net weight; this specimen has a smaller perforation than the rest. The differentiation between net weight, mace-head, and digging stick weight is crucial, as only the latter category would provide conclusive evidence that the inhabitants of Cerro La Virgen engaged in farming as well as fishing; Keatinge does not present any further evidence to indicate farming at the site.

Another problematic, late, north coast site is Medaños La Joyada, located in the desert between the Moche and Chicama valleys and adjacent to a number of sunken gardens. Moseley and Mackey (1972: 77) had identified this site[120] as a "totora fishing" settlement whose inhabitants grew totora reeds for their boats in the sunken gardens, fished, and acquired other agricultural products through exchange with inland farming sites. Kautz and Keatinge (1977) excavated at Medaños and report a set of artifacts similar to Cerro La Virgen: spinning and weaving tools, nets, net weights and floats, fishhooks, and "a partially drilled digging stick weight" (Kautz and Keatinge, 1977:89). European artifacts were also encountered, which "strongly suggests that at least some parts, if not the entire site, were occupied during the Colonial Period." In addition to excavation in the habitation area, trenches were dug in midden deposits around the sunken gardens. The remains included seafood, terrestrial animal bones, and agricultural produce. Pollen analysis revealed a high proportion of maize pollen, which Kautz and Keatinge (1977:92) believe indicates "that corn was grown, stored, and consumed at the site with little, if any, importation." Totora pollen was fairly low in frequency. The investigators therefore conclude that the inhabitants of Medaños la Joyada "participated in a broadly based subsistence economy which very likely included the cultivation of numerous crops in addition to totora (*Scirpus* sp.) as well as the exploitation of marine and littoral resources" (Kautz and Keatinge, 1977:95). These conclusions are tenable if, as Kautz and Keatinge suggest (1977: 90), maize was *not* "imported to the site with both husk and tassel intact." Maize tassels would have provided the large amount of maize pollen found in the site.

Donnan and Moseley (1968) report on the Late Intermediate Period site of Loma Lasca in the Santa valley, 400 m from the shore. Basalt cobble flakes and fish bones and scales were the most abundant remains at the site, while edible plant debris, animal and bird bone, shells, cordage, pottery, and net fragments were also present. The excavators characterize Loma Lasca as a fishing community, and state that "contemporary sites in the Santa valley tend to be located inland away from the coast" (Donnan and Moseley, 1968:503). Though lacking in detail, Donnan and Moseley's data and observations resemble the data from Lo Demás, particularly from the Sector I common residences.

Elsewhere, I have discussed the evidence for fishing specialization during periods preceding the Late Intermediate Period (Sandweiss, 1986), and will not review it here. It is worth noting, though, that the best evidence for early fishing specialization dates to the Initial Period and early Early Horizon on the north coast (Pozorski and Pozorski, 1979*b*, 1987). The lack of evidence for specialization in the intervening span (Early Horizon through Middle Horizon) probably reflects the lack of work in fishing settlements dating to these periods.

To synthesize this rapid review of the archaeological evidence, it appears that specialized fishing settlements pre-date the Inka conquest of the Peruvian coast and that the economic organization of these settlements concords with ethnohistoric Model Two. Fishing specialization does seem to be an old tradition in the Andes, dating at least from the Initial Period, but it is not yet clear whether the early, pre-Late Intermediate Period settlements included craft specialists attached to fishing lords. Presumably, attached specialists could only exist after the appearance of a political hierarchy involving

local level lords. When this development took place is still a matter of some debate.

Conclusion

In view of the results presented here and in Chapter 11, it is worth considering briefly some of the implications of fishing specialization and its role in the incorporation of the coast into the Inka empire. In doing so, we must keep in mind that most of the conclusions are drawn from a small sample in one segment of the original Chincha fishing settlement. We need a still larger sample from that settlement, as well as samples from other sectors of the Chincha polity (such as those being excavated by the Chincha–Pisco Project) in order to test the reconstruction of later pre-Hispanic Chincha socioeconomic organization presented in this monograph.

The ethnohistoric and archaeological data for the north coast of Peru suggest that the Inka did not create the fishing *parcialidades* (social units) ab ovo. Rather, it seems that the fishing specialists were traditional coastal groups which the Inka subsumed into their empire without major changes in socioeconomic organization. As highlanders, the Inka would not have been likely to engage directly in ocean fishing or in long-distance raft trading and would probably have left the organization of such activities to those with the traditional knowledge necessary to manage them. For instance, Inka fishermen *mitimaes* were drawn from coastal polities, not from highland groups (Rostworowski, 1978:127–129). At Lo Demás, many of the artifacts which indicate cultural affiliation are in the local Chincha style, suggesting that the office of fisherman in the Chincha valley was carried out by the local inhabitants, and that the socioeconomic organization of the fishermen pre-dates the Inka conquest of the valley—even though the excavated portion of the site postdates the arrival of the Inka and does not provide direct evidence for pre-Inka organization. Perhaps the valley floor once held traces of earlier fishermen; the "Aviso" states that the Late Horizon fishing settlement extended across the entire valley. For the moment, we must look to the neighboring Cañete valley, where Marcus (1987*a*, 1987*b*) has found evidence of large scale fish production and probably specialization in the Late Intermediate Period component of the Cerro Azul site.

Nevertheless, the Inka did modify the coastal system to facilitate their control. As argued in Chapter 2, the Inka probably took the long-distance raft trading franchise away from the north coast Chimú and gave it to Chincha. The Lo Demás data suggest that the Inka actively forged links with the fishing lords; presumably, such links were part of a strategy to create direct relations of dependence with the various segments of the Chincha polity, bypassing the local paramount lord.

Based on the data, reviews, and analyses presented in this study, I argue that when the Inka incorporated the coast into their empire, they found an economic system based on groups of specialists. That the Inka moved these groups around and modified their organization and relative status is clear. They did not, however, originate the specialization system, but instead adapted it to their own use. Looked at in this light, the Chincha data provide support for the strategic flexibility of Inka statecraft in the face of the tremendous variability found within their Andean empire.

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NOTES

Chapter 2

[1] "Relation and declaration of the way in which this valley of Chincha and its neighbors were governed before there were Inkas and after they came until the christians [Spaniards] entered this land."

[2] "Notice of the way that there was in the government of the Indians in the time of the Inka and how the lands and tribute were distributed."

[3] For instance, the author of the "Aviso" writes that "of the thirty thousand men that were in this valley of Chincha, *today* there are only six hundred or a few more alive and all the lands that the dead possessed *have remained* vacant . . ." ("de los treinta mil hombres que avía en este balle de Chincha, no hay agora vivos sino seiscientos o poco más y todas las tierras que los muertos poseían han quedado vacas . . .") (Rostworowski 1970: 172, emphasis added). Referring to marriage rules, Castro and Ortega-Morejón state in the "Relación" that "this custom *is kept to this day* in all the valleys" ("y esta çirimonia se guarda el dia de [h]oy en todos los m[a]s val[l]es") (Crespo 1975:98, emphasis added).

[4] ". . . en lo cual la relación dellos que dello se puede dar es sólo por la que se ha tomado de indios viejos por personas que saben su lengua. . . ."

[5] ". . . ser ellos gente varia y sus relaciones en algunas cosas diferentes."

[6] "Los yungas no adoravan al sol sino a guacas."

[7] ". . . avía un solo mayor a quien obedecían y respetavan todos ellos, éste fue primero que Topa Inga Yupanqui."

[8] "Como los Ingas los señorearon, tornaron dellos muchas costumbres, y vsaron su trage, imitándoles en otras cosas que ellos mandauan, como vnicos señores que fueron."

[9] ". . . los naturales de Chincha no dexaron de adorar también en su antiguo templo de Chinchaycama."

[10] ". . . se hizieron grandes y sumptuosos aposentos para los reyes; y muchos depósitos . . . se hizo en este valle templo del sol."

[11] ". . . los Ingas no priuaron del señorío a los Caciques y principales."

[12] Murra (1980:163) defines the mitimaes as "colonists transported from one place to another for state purposes."

[13] The yanaconas were also known simply as "yana," and the mamaconas are usually referred to as "acllas." Murra (1980:163) defines these categories as men and women "removed from ethnic jurisdiction for state purposes." The difference between yana and aclla on the one hand and mitimaes on the other seems to be that the mitimaes were moved as community groups retaining an ethnic identity and rights and obligations in their place of origin, while the yana and aclla seem to have lost this identity.

[14] ". . . una yndia que estava en este valle de Chincha señalada pa[ra] el inga. . . ."

[15] ". . . el hermoso y grande valle de Chincha, tan nombrado en todo el Perú, como temido antiguamente por los más de los naturales . . . quando el marqués don Francisco Piçarro con sus treze compañeros descubrió la costa deste reyno, por todo ella le dezían, que fuesse a Chincha, que era la mayor y mejor de todo."

[16] "Este valle es vno de los mayores de todo el Perú: y es cosa hermosa de ver sus arboledas, y acequias y quantas fructas ay por todo él. . . ."

[17] "Llegado el Ynga [a] aquel valle, como tan grande y hermoso lo vio, se alegró mucho."

[18] ". . . por order del Hernando Pizarro, sacaron de las sepulturas de los Indios muertos que estavan junto al primer monasterio que el Padre Fray Domingo de Santo Tomás . . . fundó en el balle dicho . . . cien mil marcos de plata en vasijas grandes y pequeñas y otras [cosas] . . . todos en oro y plata. . . . Y después de ésto se ha sacado mucho oro y plata en aquel balle y hay mucho más por sacar. . . ."

[19] "El señorío de estos fue siempre seguro y próspero."

[20] ". . . avía en el valle de Chincha y en su jurisdicción treinta mil hombres tributarios."

[21] ". . . treinta caciques de dichos [tributarios], que cada uno tenía mil Indios a su cargo, y señores todos estos treinta."

[22] ". . . a ymitaçión del Cuzco dividió los yndios y puso señores desta manera que [h]obiese un curaca de mill yndios. . . ."

[23] ". . . que en todos los valles [h]uviese dos parçialidades una que se llamase hanan y otra lorin . . . ."

[24] In Quechua, "lurin" or "hurin" means lower and "hanan" means upper; these terms were frequently applied to the moieties in Andean communities in Inka times (*see* note 23; *also* Rowe, 1946:262–263).

[25] ". . . no entendían sino en sembrar maíz y otras semillas y raíces de que se sustentaban y mantenían."

[26] ". . . se ponía en depósitos y dello se llevava al Cusco e a Xavxa e a Pachacama o donde les mandavan. . . ."

[27] "Avía poblado por la costa de la mar diez mil pescadores, que cada día o los más de la semana entravan en la mar, cada uno con sus balsas y redes y salían y entraban en sus puertos

señalados y conocidos, sin tener competencia los unos con los otros, porque tenían en ésto como en lo demás, gran orden y concierto y amor y temor al Inga y a sus caçiques y éstos estaban poblados desde dos leguas antes de llegar a Chincha hasta es otra parte de *Lurinchincha* [sic], que hay de una parte a otra cinco leguas; y parecía la población de esta gente una hermosa y larga calle llena de hombres y mugeres, muchachos y niñas, todos contentos y gozosos por que no entrando en la mar, todo su cuidado era beber y baylar, y lo demás."

[28] ". . . mucha Chaquira de oro y muchas esmeraldas ricas y las vendían a los caçiques de Ica . . . ."

[29] ". . . entre ellos compraban y vendían con cobre lo que avían de comer y vestir . . . ."

[30] Many other authors have accepted Rostworowski's hypothesis of Chincha as a major pre-Inka trading power as fact (e.g., D'Altroy and Earle, 1985:195; Hosler, 1988:842; Shimada, 1991: LIV). Wallace (1991:258) notes the incongruities between the ethnohistoric and archaeological records but still accepts Chincha as a pre-Inka trading power.

[31] ". . . syn pasar a otra parte ni saber si no era por oydas que [h]avía m[á]s jente porque si pasava si no era en t[iem]po que [h]avía paz y treguas se matavan unos a otros . . ." Although it may reflect a Cuzco-centric view of pre-Inka barbarism, Castro and Ortega Morejón's statement concerning pre-Inka warfare among the south coast local polities is supported by Cieza's (1987 [1553]:205–206, Cap. LXIV) account of events on the south coast during the Spanish conquest of Peru; several Inka military leaders, along with Chachapoya and Cañari Indians, joined together with the people of Ica to attack Chincha. The Chinchas responded to this threat by sending messengers to the Spanish at Pachacamac to beg for aid; with five or six Spanish horsemen and several thousand Chincha Indians, the attack was held off and the people of Ica were brought under Spanish dominion.

[32] Even after the Spanish conquest, *Spondylus* was still actively traded on the north coast. Polo (1906 [1559]:227) wrote in the mid 16th century that Spaniards were doing very well trading "some seashells called Mollo . . . especially in Trujillo and its region" (". . . conchas de la mar que llaman Mollo . . . en especial en Trugillo y su comarca . . .").

[33] "oficios y cosas en que seruian al Ynga."

[34] ". . . los que eran oficiales pagasen el tributo en cosa de su oficio y no en otra. . . ."

[35] The *encomienda* was a Spanish grant of the rights to the labor of indigenous groups.

[36] ". . . entre estos labradores había algunos oficiales buenos plateros y el día de hoy han quedado algunos."

[37] Lizárraga's (1946 [ca. 1605]:90, Cap. XLVII) inclusion of this group among the "labradores" seems to argue against such an interpretation, but he also adjusts the numbers to make the total equal the requisite 30,000 tribute-payers. This account is rather late and may represent a post facto solution to an awkward discrepancy.

[38] ". . . partes conocidas y privadas donde pescan . . . ."

Chapter 3

[39] The "Aviso" says that the Chincha merchants bought food and other necessities with copper, but the document also differentiates the fishermen from the merchants. Thus, Model One does not specify the nature of the fishermen's local exchange.

Chapter 4

[40] Menzel's Chincha style is equivalent to Kroeber and Strong's (1924) Late Chincha I (Menzel, 1966; Menzel and Rowe, 1966: 64).

[41] See Chapters 7, 8, and 11 for a reconsideration of the chronological integrity of Menzel's late pre-Hispanic Chincha sequence.

[42] Uhle (1924:69) implied that the Inka destruction of the temple of Chinchaycamac is historical fact; unfortunately, there are no citations attached to Uhle's report. He may have been referring to the sources cited by Patterson (1985:164–165), who has written that the Pachacamac oracle told the Inka ruler Thupa Yupanki to build a house (branch oracle) for his son in Chincha, where he (Pachacamac) already had a "wife" (a related temple)—possibly the site of El Cumbe. Patteron's study suggests that the Inka would not have destroyed El Cumbe; the damage which Uhle observed probably resulted from the looting which began within a few years of the Spanish conquest (*see* Chapter 2).

Chapter 5

[43] After removing the artifacts, this column and a smaller one from Sector IV were sent to the Florida State Museum, where they await detailed analysis of the organic remains.

[44] This anomalous date falls at one of the ambiguous points on the Stuiver and Pearson (1986) calibration curve and could, in fact, represent a real age as old as A.D. 1400 or as young as A.D. 1680.

Chapter 6

[45] During the excavations at Lo Demás, the term "feature" was used as a catch-all designation to cover a wide variety of archaeological occurrences. In general, "features" were defined as anything that did not appear to be a primary deposition stratum. Thus, both construetion elements such as walls and destruction elements such as pits or channels were labelled as features, as were lenses of limited areal distribution and some special finds such as intact guinea pigs or reed mats.

[46] Although filled with material from Complex D, this pit was cut into the floor that marks the top of Complex C and may more properly be assigned to that complex.

[47] According to Menzel (1976:243–245), based on her analysis of Late Ica pottery, Early Colonial Ica 10 was a time when the natives of the Ica valley used the interlude between the fall of the Inka empire and the consolidation of Spanish control to return to styles used before the Inka conquest of their valley. Among these revivals are imitation Chincha forms, recalling the immediately pre-Inka Ica 8 phase when Chincha had great influence in Ica.

[48] See Chapter 11 for a discussion of the use of the Inka *adobe* type in Building IV–2 and the probable elite status of the Sector IV inhabitants at Lo Demás.

Chapter 7

[49] Rims comprised 7.9% (279/3,552) of the sherd sample, but less than a third of all rims were preserved well enough to determine orientation and diameter. Decorated sherds are similarly few.

[50] As Rice (1987:210) points out, "All pottery has some function or utility," including elite or special purpose wares. As used by Menzel and in this study, utilitarian or domestic pottery is that for which the primary apparent use is as a tool, i.e., in one of Rice's (1987:208) "three broad realms [of domestic ceramic container use]: storage, transformation or processing, and transfer or transport."

[51] Although cooking is the most universal activity involving fire, any activity which requires placing a ceramic vessel on a fire would produce sooted sherds (Rice, 1987:235–236). An example would be metallurgy. However, the nonceramic remains from Lo

Demás provide no evidence for any activity involving fire except cooking (e.g., no slag from metallurgy), and food remains are the most abundant constituent of the excavated midden.

[52] Because of the small sample size and relatively nondiagnostic condition of most sherds, the following analysis is in terms of general shape categories rather than vessel types. Most of the shape categories from Lo Demás undoubtedly include more than one type and/or subtype, but a much larger sample must be acquired before these finer levels of classification can be defined.

[53] In the Lo Demás pottery assemblage, as well as in the Chincha pottery studied by Menzel (1966), oxidation or reduction firing seem to be deliberate choices related to decoration and shape. The reduced-fired sherds from Lo Demás are dark grey, generally thin and hard, often have incised or modeled decoration, and are usually highly polished.

[54] Marcus (1987*b*:28, Fig. 12) illustrates two sherds from Pingüino Buff wide-mouthed globular jars excavated at Cerro Azul, Cañete. Pingüino Buff is apparently a pre-Inka, Late Intermediate Period ware (Marcus 1987*b*:25). The exact form and orientation of the two rims cannot be determined from the figure provided by Marcus; the vessels appear generically similar to the Lo Demás angular rim bowls, but with a longer rim, somewhat like Menzel's (1966:85–86) "collared jars."

[55] However, Henrickson and McDonald (1983:632) state that "the maximum diameter [of serving/eating vessels] is . . . typically equivalent to the rim diameter, resulting in open, 'unrestricted' bowls."

[56] The assignment of many of the sherds to this category must be treated with caution because the sherds are broken above the corner point (where the neck meets the body; *see* Rice, 1987:218, Fig. 7.5). The illustrations show which neck sherds lack the corner point, and I have indicated in the text how many sherds assigned to each jar category include the corner point.

[57] I assigned these two sherds to the wide-mouthed jar category because they lack the corner point and could therefore have higher necks than do collared jars. The Huacarones probable collared bowl/jar sherds (Sandweiss, 1989:Fig. 29q–t) discussed above were assigned to the angular rim bowl category because they had the corner point, indicating that the neck was relatively short.

[58] With the exception of several miniatures, the height of bottles from the Uhle Chincha collections ranges from ca. 10 to 25 cm (Menzel, 1966:Appendix A).

[59] Because the height of the Lo Demás vessels cannot be reconstructed from the available sherds, it is possible that some of the sherds come from vessels which were short enough to be classified as dishes; thus, both bowls and dishes are potential analogues.

[60] Cuzco Inka pottery includes several shapes which might produce sherds somewhat similar to the angular rim bowls sherds from Lo Demás, especially Rowe's (1944:48, Fig. 8) Shapes F and J. However, the body form on these shapes is different from that of the most complete Lo Demás and Huacarones examples, and it is different from the published Cañete, Chincha, and Ica angular rim bowls.

[61] Because an analysis of the Huacarones ceramic assemblage is currently being carried out by Luís G. Lumbreras, I am awaiting his results before comparing Huacarones decoration with that on Lo Demás sherds.

[62] The dark brown observed on many sherds from Lo Demás may be a faded black; many of the designs seen in dark brown in Lo Demás are described by Menzel (1966) as black on vessels in the Uhle collection. Menzel's study used whole pots from graves, which might account for better color preservation.

[63] At the site of Hatunqolla near Lake Titicaca, Julien (1983: 231) found that her three Inka-associated phases showed a transition from two to three lateral stems in the fern pattern. By Phase 3, only the three-strand stem was in use; based on Julien's analysis, Phase 3 would have begun around A.D. 1500, a date which is roughly consistent with other chronological indicators for Lo Demás. However, Julien's study is based on a small sample; there is no evidence to confirm or deny the areal extent of the trend which she noted, and the Lo Demás assemblage contains only one sherd with a fern pattern.

[64] Menzel (1966:Appendix B) assigns both of these vessels to her LIP 8/early LH Chincha Style. The fish on these pots most closely resemble an Ica 6 design (Menzel 1976:Plate 27–315).

[65] The post-Chincha pots have resin paint in the incisions, unlike the Lo Demás sherds. However, the different conditions of use and deposition could well explain the lack of paint on the latter examples.

Chapter 8

[66] Excavations in Sector I include Subunits A1, A2, A3, B3, C3, 1A–D, 2A–D, 3A–D, 4A–D, 10A, and 10D.

[67] The eyes are particularly important as chronological markers because the lenticular, grooved eye has its closest parallel in Inka figurines (Menzel, 1967:27).

[68] Menzel (1966:Appendix B) assigns the graves containing the decorated metal ear plugs to the Late Horizon and early Colonial Period. One of these graves (F–4) had a European glass bead, while the other two (including the one containing the ear plug with the closest similarity in design to the tweezers bird—Fig. 40) have only pre-Hispanic artifacts.

[69] Sr. Pachas told me that the rest of the collection, which he had given away to friends and relatives, consisted of the same kinds of metal pieces. However, I suspect that a larger number of finished or nearly finished artifacts may well have been part of the original collection; these are the kind of objects which would appeal to local collectors. Even so, the general conclusion that the pieces represent a set of materials from a workshop remains valid; the missing material would have helped define the kinds of artifacts produced by that workshop.

[70] Menzel (1976:40–42) found shallow dishes throughout the Late Intermediate Period and Late Horizon sequence in Ica; the Chincha specimen found by Vivanco most closely resembles the Phase 9 (Late Horizon, Inka occupation) versions from Ica.

[71] If the "Aviso" document is correct in stating that the fishing settlement ran for many kilometers along the shore to the north and south of "Chincha" (presumably La Centinela, *see* Chapter 2), then the bluff to the north of Lo Demás was part of the fishermen's territory. A metallurgical workshop located along or near the bluff would therefore be part of the fishing settlement.

[72] Some copper was also available in the Chincha area. Uhle (1924:91) reports an old copper mine at the petroglyph site of Huancor in the San Juan (Chincha river) valley, some 32 to 33 km inland from the coast. He indicates that the mine was worked in colonial times, but suggests that it may also have been used during the pre-Hispanic era. Uhle notes that the name of a nearby lateral quebrada, Yauritambo, "means 'copper harbor' in Quechua" (1924). I visited Huancor on several occasions in 1984, once with geographer/geologist Alan K. Craig. After inspecting the "mine" (a small hollow of only a few meters depth, width, and height) and the surrounding area, Dr. Craig concluded that the zone is one of contact metamorphism where mineralization of elements such as copper is probably widespread. He suggested that the copper deposits, though individually small, would be fairly numerous and of very high grade.

[73] Kroeber and Strong (1924:35) describe this type of wooden

object as "28 to 37 cm. long, with a round head or knob. The other end is sometimes sharpened to a point, but is always flattened."

[74] Minimum orifice diameter was measured from the interior of the sherd drawings at the most restricted surviving point. Often, the orientation of the sherd at the break indicated that the actual minimum diameter was less than that measured.

[75] Sectors I and IV each had one case of cobble cortex flake and wood fragment association. In Sector I, this association occurred in Stratigraphic Complex B (cat. 1732); the wood fragment had one clear cut mark. In Sector IV, the association occurred in level 26–4c of Subunit 26D (cat. 1725); the wood fragment did not show any clear cut marks, though it was charred. Neither of the cobble cortex flakes were among those analyzed by Kvietok for edge damage.

[76] The presence of a wool textile in Lo Demás raises the question of whether the wool (raw or as a finished textile) was imported, or whether it was obtained in situ from the camelids whose presence is documented in Sector IV (*see* Chapter 9). This issue is considered further in Chapters 11 and 12.

[77] Height is defined as the length of the central hole; width is the dimension perpendicular to this axis.

Chapter 9

[78] "MNI-indicators" vary according to class; this study uses the following criteria. For bivalves, we counted for left and right hinges and took the larger number as the MNI. For gastropods, we counted apices and/or fragments of the columellar axis comprising over 50% of the original height; the larger number equalled the MNI. *Fissurella* provided a special case: on this genus (keyhole limpets), the apex consists of an oval hole. Shell fragments with over 50% of this hole were considered as MNI-indicators. Chiton have eight plates; to calculate the MNI for this class, we divided the number of plates in a provenience by eight and rounded the result to the next highest integer. MNI was not counted for barnacles (*Balanus* spp.).

[79] *Spondylus* may briefly colonize the Peruvian coast as far south as Callao as a result of south-flowing, warm El Niño waters (Sandweiss, 1982:219). El Niño occurs at irregular intervals; strong events last about a year. However, although individual *Spondylus* larvae emplaced during such events might survive for several years and reach a noticeable size, they would be unable to reproduce after El Niño ended and the cool-water Humboldt (Peruvian) current returned; the resulting populations would be both limited in size and ephemeral in time. Under these circumstances, El Niño would not have provided a significant source of *Spondylus* shells for Peruvian rituals.

[80] According to a 17th century document cited by Rostworowski (1970:152), a piece of *Spondylus* "smaller than a fingernail"—like the Lo Demás specimens—had a high monetary value in the Colonial Period.

[81] Faunal, or zoogeographic, provinces are sections of coast containing a characteristic set of molluscan species. Olsson (1961: 24) defines the Peruvian Province as running from "Punta Aguja at the southwestern end of Sechura Bay in northwestern Peru (lat. 5°40'S.) south to near Chiloe Island, Chile (near lat. 42°S.)." He further writes (Olsson, 1961:33) that "although the Peruvian Province extends well into the tropics and within a few degrees of the equator, its fauna is essentially one of cool or temperate waters, maintained partly by the Peruvian Current and by strong, inshore upwellings from depths."

[82] Molluscan species found at Lo Demás which may have been available on the Chincha coast during the past include *Mesodesma donacium, Protothaca thaca, Eurhomalea rufa, Thais haemastoma, Tegula atra, Crepipatella* spp., *Polinices uber,* and *Oliva peruvianus. Petricola denticulata* bores holes in colonial polychaete worm tubes. Because pieces of calcareous heads of polychaete worms are fairly common in Lo Demás (*see* Chapter 8, section on lithics), I suspect that the specimens of *Petricola* accompanied this material and were not acquired deliberately. The worm heads were probably collected on the Chincha shoreline.

[83] Cool water, indigenous Peruvian mollusk species which were probably imported to Lo Demás from other parts of the south coast include *Perumytilus purpuratus, Acmaea* spp., *Concholepas concholepas, Fissurella* spp., *Aulacomya ater, Argopecten purpuratus,* and *Choromytilus chorus.* All of these species except *Aulacomya ater* are very rare at Lo Demás, and even *A. ater* is not very common (*see* Table 27).

[84] The virtual absence of *Perumytilus purpuratus* combined with the importance of *Semimytilus algosus* in the Lo Demás molluscan assemblage strongly suggests that the Late Horizon Chincha shoreline had no rocks which extended into the upper intertidal zone. Wherever I have observed *Semimytilus* along the Peruvian coast, I have also seen *Perumytilus* whenever the rocks reached into the splash zone. In archaeologieal sites with access to upper and lower intertidal rocky zones, *Perumytilus* and *Semimytilus* tend to co-occur (e.g., El Paraíso, central coast—Sandweiss, 1985*b*).

[85] There are still some unsolved problems, however. As Koloseike (1969:150) pointed out, seasonal cycles and environmental conditions cause variations in meat weight that are not necessarily reflected in shell weight or linear dimensions. I know of no study that accounts for both of these factors, though Tomka (1980) does provide data for *Aulacomya ater* during several seasons. Appropriate experiments are possible, though time consuming; the principal result would probably be a larger (more realistic) error estimate for calculated meat weight values.

[86] In this context, I define "cultural preference" as any criterion by which people select certain items (mollusks) from the universe of those available. A partial list of such criteria includes palatability, ritual proscription, and differential access due to economic or social status.

[87] This dichotomy is not absolute. Environmental alterations or perturbations may result from human activity or from the synergistic effects of human and natural processes. A number of recent studies on shellfish communities on the Andean coast and elsewhere (e.g., Castilla and Duran, 1985; Hockey and Bosman, 1986) have shown that human predation has a significant effect on molluscan community composition. The effects of natural perturbations such as El Niño are even better known (e.g., Arntz, 1986; Arntz et al., 1985; Rollins et al., 1986). The crash of the Peruvian anchoveta (*Engraulis ringens*) stock in the early 1970s provides an example of probable interaction between human (overfishing) and natural (El Niño) processes (Cushing, 1981: 218–219). The disappearance of *Choromytilus* from the Peruvian north coast following the Initial Period may be another such example.

[88] Changes in technology can affect availability; however, the technology involved in collecting mollusks is generally quite simple, and in sites occupied over relatively short periods (such as Lo Demás), technological innovation probably does not account for changes in species frequencies.